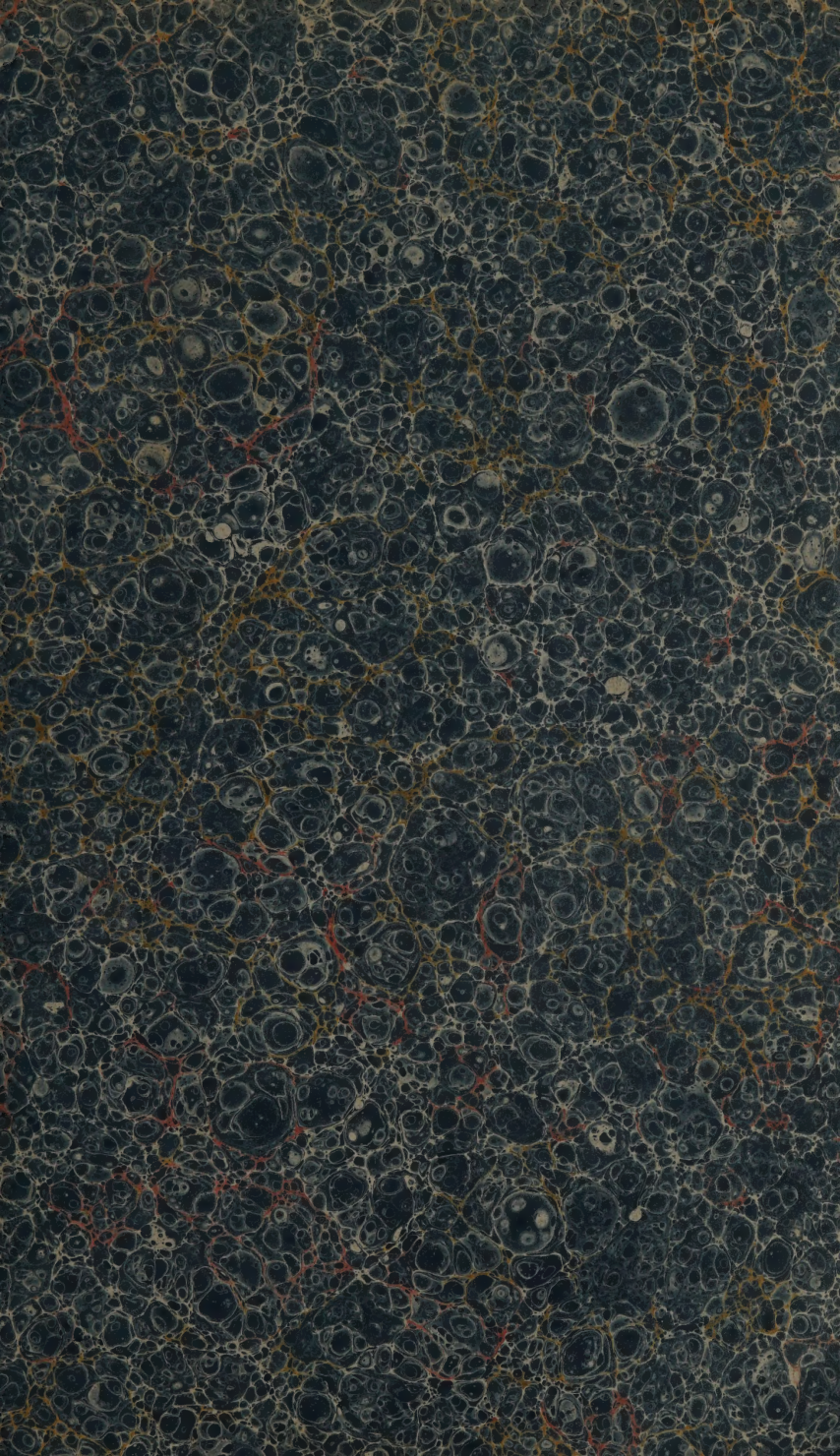


Hon<sup>ble</sup>



Hugh Percy





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NATURAL HISTORY,

GENERAL AND PARTICULAR,

BY THE

*COUNT DE BUFFON,*

TRANSLATED INTO ENGLISH.

ILLUSTRATED

WITH ABOVE 300 COPPER-PLATES,

AND OCCASIONAL

NOTES AND OBSERVATIONS.

By WILLIAM SMELLIE,

MEMBER OF THE ANTIQUARIAN AND ROYAL  
SOCIETIES OF EDINBURGH.

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SECOND EDITION.

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V O L. IV.

L O N D O N:

Printed for W. STRAHAN and T. CADELL, in the Strand.

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M,DCC,LXXXV.

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# NATURAL HISTORY.

## T H E D O G \*.

**N**EITHER majesty and elegance of form, strength of body, freedom of movement, nor other external qualities, constitute the principal dignity of animated beings. In man, we

VOL. IV. A prefer

\* The dog has six cutting teeth and two canine in each jaw: He has five toes on the fore feet, and four, and often five, on the hind feet. His tail bends towards the left, a character common to the whole, and first observed by Linnaeus; Pennant, *Synopf.* p. 141.

CHARACT. GEN.—*Dentes primores superiores VI. laterales, longiores, distantes; intermedii lobati: Inferiores VI. laterales, lobati. Lanarii salitarii, incurvati. Molares VI. f. VII.*—CHARACT. SPEC. *Canis cauda finistrorsum recurvata; Linn. Syst.* 56. Linnaeus defines only the eleven following varieties of the dog.

1. *Domesticus*, auriculis erectis, cauda subtus lanata; *the shepherd's dog.*
2. *Sagax*, auriculis pendulis, digito spurio ad tibias posticas; *the hound.*
3. *Græius*, magnitudine lupi, trunco curvato, rostro attenuato; *common grey-hound.*
4. *Molossus*, magnitudine lupi, labiis ad latera pendulis, corpore tórofo; *the mastiff.*
5. *Aquaticus*, pilo crispo, longo, instar ovis; *the water-dog.*
6. *Meliteus*, magnitudine sciuri; *the shock dog, or lap-dog.*

prefer genius to figure, courage to strength, and sentiment to beauty ; and, therefore, we are induced to think, that the chief excellence of an animal consists also of internal qualities. By these he differs from an automaton, rises above the vegetable tribes, and approaches the human species. It is sentiment which ennobles, governs, and gives activity to all his organs and propensities. Hence the perfection of an animal depends on sentiment alone ; and, in proportion to its extent, his faculties, resources, and relations with the rest of the universe, are augmented. When his sentiment is delicate, and improved by education, he is then fit to associate with man, to concur with his designs, to aid, to defend, and to caress him. By a frequent performance of these services, he conciliates the favour of his master, and, from a tyrant, converts him into a friend and protector.

The dog, independent of the beauty of his figure, his strength, vivacity, and nimbleness, possesses every internal excellence which can attract the regard of man. A passionate, and even a ferocious and sanguinary temper, renders the wild dog formidable to all animals. But, in the domestic

7. *Fricator*, naso, resimo, auribus pendulis, corpore quadrato ; *the pug-dog* ?
8. *Vertagus*, pedibus curvatis, trunco longo, faepius variegato ; *the tumbler*.
9. *Avicularius*, cauda truncata.
10. *Extrarius*, auriculis longis, lanatis, pendulis.
11. *Egyptius*, nudus absque pilis ; *the Turkish dog*.

domestic dog, these hostile dispositions vanish, and are succeeded by the softer sentiments of attachment, and the desire of pleasing. He runs with chearfulness and alacrity to his master's foot, where he lays down his courage, his strength, and his talents. He attends for orders, which he is always solicitous to execute. He consults, he interrogates, he supplicates his master. A single glance of the eye is sufficient; for he knows the external signs of our intentions and wishes. Without being endowed, like man, with the faculty of thinking, his feelings are extremely delicate, and he has more fidelity and steadiness in his affection. He is not corrupted by ambition, by interested views, or by a desire of revenge; and he has no fear, but that of displeasing. He is all zeal, ardour, and obedience. More apt to recal benefits than outrages, he is not discouraged by blows or bad treatment, but calmly suffers, and soon forgets them; or he remembers them only to increase his attachment. Instead of flying, or discovering marks of resentment, he exposes himself to torture, and licks the hand from which he received the blow. To the cruelty of his master, he only opposes complaint, patience, and submission.

More tractable than man, and more pliant than any other animal, the dog is not only soon instructed, but even conforms himself to the manners, movements, and habits of those who



govern him. He assumes the very tone of the family in which he lives. Like other servants, he is haughty with the great, and rustic with the peasant. Always eager to obey and to please his master, or his friends, he pays no attention to strangers, and furiously repels beggars, whom he distinguishes by their dress, their voice, and their gestures. When the charge of a house or garden is committed to him during the night, his boldness increases, and he sometimes becomes perfectly ferocious. He watches, goes the rounds, smells strangers at a distance, and, if they stop or attempt to leap any barrier, he instantly darts upon them, and, by barking, and other marks of passion, alarms the family and neighbourhood. Equally furious against thieves as against rapacious animals, he attacks and wounds them, and forces them from whatever they have been attempting to carry off: But, contented with victory, he lies down upon the spoil, and will not touch it even to satisfy his appetite, exhibiting, at the same time, an example of courage, temperance, and fidelity.

To conceive the importance of this species in the order of Nature, let us suppose that it never existed. Without the assistance of the dog, how could man have conquered, tamed, and reduced the other animals into slavery? How could he still discover, hunt down, and destroy noxious and savage beasts? For his own safety, and to render him master of the animated world, it was  
necessary

necessary to form a party among the animals themselves, to conciliate by careffes those which were capable of attachment and obedience, in order to oppose them to the other species. Hence the training of the dog seems to have been the first art invented by man ; and the result of this art was the conquest and peaceable possession of the earth.

Most animals are superior to man in agility, swiftness, strength, and even in courage : Nature has fortified and armed them better. Their senses, and particularly that of smelling, are likewise more perfect. To have brought over to our interest a bold and tractable species, like that of the dog, was to acquire new senses and faculties. The machines and instruments we have invented to improve, or to extend our other senses, are not nearly so useful as those presented to us ready made by Nature, which, by supplying the defects of our smelling, have furnished us with great and permanent resources for conquest and dominion. The dog, ever faithful to man, will always maintain a portion of this empire ; he will always preserve a degree of superiority above the other animals. He reigns at the head of a flock, and is better heard than the voice of the shepherd. Safety, order, and discipline, are the fruits of his vigilance and activity. Sheep and cattle are a people subjected to his management, whom he prudently conducts and protects, and never employs force against

A 3

them,

them, but for the preservation of peace and good order.

But in war against his enemies, or wild animals, he makes a full display of his courage and intelligence. Here his natural and acquired talents are united. As soon as the din of arms is heard, as soon as the horn, or the voice of the hunter gives the alarm, the dog, sparkling with redoubled ardour, demonstrates his joy by the most lively emotions: He announces, by his movements and cries, his impatience for the combat, and his passion for victory. Sometimes he moves silently along, reconnoitres the ground, and endeavours to discover and surprise the enemy. At other times, he traces the animal's steps, and, by different accents, indicates the distance, the species, and even the age of the fugitive. Pushed, intimidated, and despairing of safety from flight alone, the poor animal likewise exerts its faculties, and opposes craftiness to sagacity\*. The resources of instinct are now worthy of admiration. To make him lose the scent, the creature doubles, returns on its former steps, bounds, and wishes to detach itself from the earth; at one leap it often clears a high way, or a hedge, and swims over brooks and rivers. But, always pursued, and being unable to conceal or annihilate its body, the animal endeavours to start another of less experience, and, after running together till the former imagines that the

\* See below, article Deer. two



two scents or traces are confounded, it then suddenly separates, in order to let the other fall a victim to the deceived enemy.

But the dog, by the superiority he has acquired from habit and education, and from the peculiar fineness of his sensations, loses not the object of his pursuit. By the acuteness of his scent, he unravels all the windings of the labyrinth, all the false routs which were intended to deceive him ; and, instead of abandoning the enemy for an indifferent animal, he redoubles his ardour, he overtakes, attacks, slays, and extinguishes his thirst and his rage in the blood of the victim.

The propensity to hunting, or to war, is equally strong in man as in other animals. The whole knowledge of the Savage is confined to fighting and hunting. All carnivorous animals, which have weapons and strength, hunt naturally. The lion and the tiger, whose strength is so great as to ensure them of victory, hunt alone, and without artifice. Wolves, foxes, and wild dogs, hunt in packs, assist each other with much art, and mutually share in the prey. When the natural talents of the dog have been improved by education, when he has learned to repress his ardour, and to regulate his movements, he then hunts artificially, and is always certain of success.

In desert and depopulated countries, there are wild dogs, which, in their manners, differ not from  
wolves,

wolves, except by the facility with which they may be tamed. They unite in troops, and attack wild boars, and bulls, and even lions and tigers. The wild dogs of America are of the domestic race, and were transported thither from Europe. Some of them have been abandoned in these deserts, where they have multiplied so prodigiously, that they spread over the inhabited countries in great packs, and attack the domestic cattle, and even insult the natives, who are obliged to disperse and kill them, like other ferocious animals. Wild dogs, though they have no knowledge of man, when approached with gentleness, soon soften, become familiar, and remain faithfully attached to their masters. But the wolf, though taken young, and brought up in the house, is gentle when a mere cub only, never loses his taste for prey, and sooner or later indulges his inclination for rapine and destruction.

The dog may be said to be the only animal whose fidelity is unshaken; who always knows his master, and the friends of the family; who distinguishes a stranger as soon as he arrives; who understands his own name, and the voices of the domestics; who confides not in himself; who calls on his lost master by cries and lamentations; who, in long journeys, which he has travelled but once, remembers and finds out the roads: In fine, the dog is the only animal whose

natural

natural talents are conspicuous, and whose education is always successful.

Of all animals, the dog is also most susceptible of impressions, most easily modified by moral causes, and most subject to alterations occasioned by physical influence. His temperament, faculties, and habits, vary prodigiously; and even the figure of his body is by no means constant. In the same country, one dog differs greatly from another; and, in different climates, the very species seems to be changed. From these causes, the number and mixture of races are so great, that it is almost impossible to recognise or enumerate them. To the same causes must be attributed those remarkable varieties in size, figure, length of muzzle, form of the head, length and direction of the ears and tail, colour, quantity of hair, &c. In a word, nothing seems to be permanent in these animals but their internal organization, and the faculty of procreating together. As those which differ most from each other are capable of intermixing, and of producing fertile individuals, it is evident, that all dogs, however diversified, constitute but one species.

In this numerous variety of races, it is difficult to investigate the character of the primitive stock from which they have all sprung. How shall the effects produced by the influence of climate, food, &c. be distinguished? How shall we perceive the changes introduced by the  
mixture



mixture of different races when in a wild, or in a domestic state? In the progress of time, all these causes alter the most permanent forms; and the original stamp of Nature never preserves its purity in beings which have been long under the management of man. This original impression is best preserved in those animals that have the independent choice both of their climate and food, the most ancient of which are still faithfully represented by their descendants. But those which man has subdued, transported from climate to climate, and changed their food, their habits and manner of living, must necessarily have suffered the greatest alterations in their form; and, it is a well known fact, that there are more varieties among the domestic than the wild animals: And, of all domestic animals, as the dog is most closely attached to man, lives as irregularly, and is endowed with dispositions which render him docile, obedient, susceptible of every impression, and submissive to every restraint, it is not surprising that he should likewise exhibit the greatest variety in figure, size, colour, and other qualities.

But other causes concur in producing these changes. The life of the dog is short; his prolific powers are great; and, as he is perpetually under the eye of man, whenever by any accident, which is not uncommon in Nature, some individuals, marked with singular characters, appeared, they would be perpetuated by preventing

ing their intermixture with any other kinds, as is done at present when we want to procure new races of dogs, or of other animals. Besides, though every species were equally ancient, the number of generations, from the creation, being greater in those whose lives are short, their varieties, alterations, and even degeneration, must become more conspicuous; because they are farther removed from the original stock than those which live longer. Man is at present eight times nearer Adam, than the dog to his first parent; because man lives eighty years, and the dog only ten. If, therefore, by any cause, these two species had an equal tendency to degenerate, the alteration would be ten times more strongly marked in the dog than in man.

Those small animals whose lives are so short, that they are succeeded every year by a new generation, are infinitely more subject to variations of every kind than those which live longer. The same remark is applicable to annual plants; some of which may be considered as of an artificial or factitious nature. Wheat, for example, has been so greatly altered by man, that it is now no where to be found in a natural state. It has a similarity to darnel, dog's-grass, and several other grasses; but still we know not to which of these plants it ought to be referred: And, as it is annually renewed, is used as the common food of man, and more cultivated than any other vegetable, its nature, of course, has undergone

undergone the greatest alterations. Hence man is able, not only to make every individual in the universe answer his own ends, but, with the assistance of time, he can change, modify, and improve their species. This is the chief power he possesses over nature. To have transformed a barren herb into wheat, is a kind of creation, of which, however, we have no reason to boast, since it is only by the sweat of our brows, and reiterated culture, that we are able to extract from the earth a scanty, and often a bitter subsistence.

Hence, both in the animal and vegetable kingdoms, the species which have received the highest culture from man, have undergone the greatest changes from their original condition: And, as we are often unable to recognise their primitive form, as in the example of wheat and other grain, it is not impossible, that, among the numerous varieties of dogs which at present subsist, not one of them should resemble the first animal of the species that virtually gave birth to the whole.

Nature, however, when not restrained, never fails to resume her rights. Wheat, when sown on uncultivated ground, degenerates the very first year; and, if sown for a succession of ages upon the same ground, the degeneration would gradually proceed till the plant acquired its original form. By an experiment of this kind, the time required by Nature for destroying the effects

effects of art, and resuming her pristine state, might be discovered. This experiment might be easily performed on plants : But, in animals, there is little hope of its success ; because it is difficult to manage them with sufficient dexterity, or to overcome their invincible repugnance against every thing that restrains or counteracts their natural or acquired habits. We cannot, therefore, expect to learn, by this method, the primitive race of dogs, or of other animals which are subjected to permanent varieties. But, to supply the place of facts which cannot be ascertained, we may collect particular marks, and from these draw probable conjectures.

The domestic dogs which were abandoned in the deserts of America, and have lived in a wild state during 150 or 200 years, though originally derived from altered races, must, during so long a course of time, have made greater or smaller approaches toward their primitive form. Travellers, however, inform us, that they resemble our grey-hounds \*. They make the same remark with regard to the wild dogs of Congo †, which, like those of America, make war in packs against tigers, lions, &c. But others, without comparing the wild dogs of St Domingo to grey-hounds, only observe, that they have generally a long flat head, a slender muzzle,

\* Hist. des aventuriers Flibustiers, par Oexmelin, tom. 1. p. 112.      † Hist. gen. des voyages, par l'Abbé Prevost, tom. 1. p. 86.



muzzle, a ferocious air, and meagre bodies ; that they are exceedingly swift in the chase, hunt in the most perfect manner, and are easily tamed, when taken young \*. Thus these wild dogs are very meagre and fleet; and, as the common greyhound differs little, in other respects, from the Irish greyhound, or from the shepherd's dog, it is probable that those wild dogs rather belong to this kind than to the true greyhound race ; for, on the other hand, the more ancient travellers tell us, that the native dogs of Canada had erect ears, like the fox, and resembled our village or shepherd's dog † ; that those belonging to the savages of the Antilles had very long heads and ears, and approached to the figure of foxes ‡ ; that the Indians of Peru had only a large and a small kind, which they called *Alco* || ; and that those of the Isthmus of America were very ugly, and had long, coarse hair, which likewise implies erect ears §. Hence it is apparent, that the original dogs of America, before they had any communication with those of Europe, were all of one race, and that they approached most to the dogs with slender muzzles, erect ears, and coarse hair, like the shepherd's dog :

\* Nouv. voyages aux îles de l'Amerique, tom. 5. p. 195.

† Voyage du pays des Hurons, par Sabard Theodat, p. 310.

‡ Hist. gen. des Antilles, par le P. du Tertre, tom. 2. p. 306.

|| Hist. des Incas, tom. 1. p. 265. Wafer's voyage subjoined to those of Dampier, vol. 4. p. 223. § Nouveaux voyages aux îles de l'Amerique, tom. 5. p. 195.

dog: And I am still farther convinced that the wild dogs of St Domingo are not genuine greyhounds, because the latter are so rare in France, that they are brought, for the use of the King, from Constantinople and other parts of the Levant, and because I never knew that any greyhounds were transported to France from St Domingo, or any of our American colonies. Besides, by consulting what travellers had said concerning the dogs of different countries, we find that all the dogs of cold climates have long muzzles and erect ears; that those of Lapland are small, and have long hair, erect ears, and sharp muzzles \*; that the Siberian dogs †, and those called wolf-dogs, are larger than the Lapland kind; but their ears are still erect, their hair coarse, and their muzzle sharp; that those of Iceland ‡ are nearly similar to the Siberian dog; and, in the same manner, that the native dogs of the Cape of Good Hope ||, and other warm climates, have pointed muzzles, erect ears, long trailing tails, and clear, but long, rough hair; that these dogs are excellent for guarding flocks, and, of course, that they resemble the shepherd's dog, not only in figure, but in instinct; that, in still warmer climates, as at Madagascar §, Madura \*\*, Calicut,

\* Voyage de la Martiniere, p. 75. Il Genio vagante, vol 2. p. 13. † See plate XXIX. ‡ See plate XXX. § Description du Cap. par Kolbe, part. 1. p. 304. § Voyage de Flacourt, p. 152. \*\* Voyage d'Innigo de Biervillas, p. 178.

Calicut \*, and Malabar †, the native dogs have all along muzzles, erect ears, and have such a resemblance to the shepherd's dog, that, when Irish grey-hounds, spaniels, water-dogs, bull-dogs, blood-hounds, grey-hounds, &c. were transported thither, they degenerated at the second or third generation ; lastly, that, in excessive warm countries, as in Guiney ‡, this degeneration is still quicker ; for, in three or four years, they lose their voice, bark no more, but make a dismal kind of howling noise ; and their progeny have erect ears, like the fox. The native dogs of these countries are ugly animals, with sharp muzzles, long erect ears, and long pointed tails. There is no hair on their bodies ; their skin is commonly spotted, but sometimes of a uniform colour : In a word, they are disagreeable to the eye, and still more so to the touch.

We may, therefore, suppose, with some degree of probability, that the shepherd's dog approaches nearer to the primitive race than any of the other kinds ; for in every country inhabited by savage or by half civilized men, the native dogs resemble this race more than any other. Besides, in the whole of the New Continent, there was no other variety ; neither is there any other at the south and north extremities

\* Voyage de Francis Pyrard, tom 1. p. 426.

† Voyage

de Jean Ovington, tom. 1. p. 276.

‡ Hist. gen. des voyages, par M. l'Abbé Prevost, tom. 4. p. 229.

mities of our own continent; and in France, and other temperate climates, they are very numerous, though greater attention has been paid to the rearing of more beautiful kinds, than to the preservation of this race, which has no recommendation but its utility, and for that reason has been abandoned to the care of the sheep farmers. If it be farther considered, that this dog, notwithstanding his ugliness, and his wild and melancholy aspect, is superior in instinct to all others; that he has a decided character independent of education; that he alone is born fully trained; that, guided solely by natural powers, he applies himself spontaneously to the keeping of flocks, which he executes with amazing fidelity, vigilance, and assiduity; that he conducts them with an admirable and uncommunicated intelligence; that his talents at the same time astonish and give repose to his master, while other dogs require the most laborious instruction to train them to the purposes for which they are destined; we will be confirmed in the opinion, that the shepherd's dog is the true dog of Nature; that he has been preferably bestowed on us for the extent of his utility; that he has a superior relation to the general order of animated beings, who mutually depend on each other; and, lastly, that he ought to be regarded as the origin and model of the whole species.

In the frozen regions of the north, the human species is deformed, rustic, and diminutive. Lap-  
 VOL. IV. B land,



land, Greenland, and all countries where the cold is excessive, produce only dwarfish and ugly men. But, in the neighbouring and less rigorous regions of Finland, Denmark, &c. the most beautiful race suddenly appears; for, in figure, colour, and stature, they are perhaps the handsomest of the human kind. The same phaenomenon is exhibited in the dog-species. The Lapland dogs are very ugly, and so small, that they exceed not a foot in length\*. Those of Siberia, though less ugly, have erect ears, and a savage aspect: But, in the neighbouring climate, where we meet with the handsome men already mentioned †, we find also the most beautiful and largest dogs. The dogs of Tartary, of Albania, of the north of Greece, of Denmark, and of Ireland, are the largest and strongest of the species, and are used for drawing carriages. The Irish grey-hounds are of a very ancient race, and still exist, though their number is small, in their original climate. They were called by the ancients dogs of Epirus, and Albanian dogs. Pliny has recorded, in most elegant and energetic terms, a combat between one of these dogs, first with a lion, and then with an elephant ‡. They are much

\* Il Genio vagante, vol. 2. p. 13.

† See vol. 3. art. Varieties of the human species.

‡ Indiam petenti Alexandro magno, Rex Albaniae donodederat inusitatae magnitudinis unum, cujus specie delectatus, iussit urfos, mox apros, et deinde damas emitti, contemptu immobili jacenti eo; qua segnitie tanti corporis offensus Imperator generosi spiritus, eum interimi jussi. Nunciavit hoc fama

much larger than the mastiff. In France, they are so rare, that I never saw above one of them, which appeared, when sitting, to be about five feet high, and resembled in figure the Danish dog\*; but greatly exceeded him in stature. He was totally white, and of a mild and peaceable disposition. We find, then, in all the temperate climates, as in Britain, France, Germany, Spain, and Italy, men and dogs of all races. This variety proceeds partly from the influence of climate, and partly from the great concurrence and intermixture of foreigners. With regard to dogs, I shall mark, with all possible attention, the similarities and differences which shelter, care, food, and climate, have produced among these animals.

The Danish dog†, the Irish grey-hound‡, and the common grey-hound||, though they appear to be different, are only the same dog. The Danish dog is but a more corpulent Irish

B 2 grey-

fama regi; itaque alterum mittens, addidit mandata ne in parvis experiri vellet, sed in leone, elephantove; duos sibi fuisse hoc interempto, praeterea nullum fore. Nec distulit Alexander, leonemque fractum protinus vidit. Postea elephantum jussit induci, haud alio magis spectaculo laetatus. Horrentibus quippe per totum corpus villis, ingenti primum latratu intonuit, moxque increvit assultans, contraque belluam exurgens hinc et illinc artifice dimicatione, qua maxime opus esset, infestans, atque evitans, donec assidua rotatam vertigine afflixit, ad casum ejus tellure concussa. *Plin. hist. natur. lib. VIII.*

\* See plate XXV.

† See plate XXIV.

‡ See plate XXV.

|| See plate XXVI.

grey-hound; and the common grey-hound is the Irish grey-hound rendered thinner and more delicate by culture; for these three dogs, though perfectly distinguishable at first sight, differ not more from each other than a Dutchman, a Frenchman, and an Italian. If we suppose the Irish grey-hound to have been a native of France, he would have produced the Danish dog in a colder climate, and the common grey-hound in a warmer one: And this conjecture is even verified by experience; for the Danish dogs come to us from the north, and the grey-hounds from Constantinople and the Levant. The shepherd's dog \*, the Pomeranian or wolf-dog †, the Siberian dog ‡, to which may be joined the Lapland dog, the Canadian dog, the Hotentot dog, and all those which have erect ears, constitute but one kind. They differ from the shepherd's dog only in stature, in being more or less gross, or in the length, coarseness, or bushiness of their hair. The hound ||, the harrier §, the turnspit \*\*, the water-dog ††, and even the spaniel ‡‡, may be regarded as one dog. Their figure and instincts are nearly the same; and they differ only in the length of their legs, and the size of their ears, which, however, in all of them, are long, soft, and pendulous. These dogs are natives of France; and I am uncertain whether the Dalma-  
tian

\* See plate XXVII.      † Plate XXVIII.      ‡ Plate XXIX.  
 || Plate XXXI.      § Plate XXXII.      \*\* Plate XXXIV.  
 †† Plate XXXVI.      ‡‡ Plate XXXVII.

tian dog \*, or, as it is called, the harrier of Bengal, ought to be disjoined from them ; for it differs from our harrier only in colour. I am convinced that this dog is not an original native of Bengal, or of any other part of India, and that it is not, as has been pretended, the Indian dog mentioned by the ancients, and said to have been produced between a dog and a tiger ; for it has been known in Italy above 170 years ago, and not considered as a dog brought from India, but as a common harrier : ‘ Canis ‘ sagax, vulgo brachus,’ says Aldrovandus, ‘ an ‘ unius vel varii coloris fit, parum refert ; in ‘ Italia eligitur varius et maculosae lyncei perfi- ‘ milis ; cum tamen niger color, vel albus, aut ‘ fulvus, non fit spernendus †.’

Britain, France, Germany, &c. appear to have given birth to the hound, the harrier, and the turnspit : When transported into climates a little warmer, as Turkey or Persia, these dogs degenerate. But the spaniels and water-dogs are natives of Spain and Barbary, where the temperature of the climate renders the hair of all animals longer and finer than in any other country. The bull-dog ‡, what is improperly called the small Danish dog, for it has no other resem-

B 3

blance

\* Dalmatia, I have been informed, says Mr Pennant, is the country of this elegant dog. As for those of India, they are generally small, and very ugly, or, if the European dogs are brought there, they immediately degenerate. *Synops. of quad.*

p. 145.

† Aldrovand. quad. digit. lib. 3. p. 552.

‡ See plate XLII.



blance to the Danish dog \* than the shortness of its hair, the naked or Turkish dog †, and the Iceland dog ‡, constitute but one race, which, being transported from cold countries, where the fur is always strong, into the warmer climates of Africa and India, have lost their hair; for the naked dog is improperly called the Turkish dog: It is not in the temperate climate of Turkey that dogs lose their hair, but in Guiney, and the warm regions of India. The Turkish dog is nothing but the small Danish dog, which has first been transported to a very warm climate, where it cast its hair, and afterwards brought to Turkey, and propagated carefully on account of its singularity. The first of them, says Aldrovandus, which appeared in Europe, were brought into Italy in his own time, where they could not be propagated, because the climate was too cold for them. But, as he gives no description of these naked dogs, we know not whether they were similar to what is now called the Turkish, nor, consequently, whether they can be referred to the small Danish dog; because dogs of every kind lose their hair in very warm climates ||; and, as formerly remarked, they also lose their voice. In some countries, they are perfectly mute; in others, they lose only the faculty of barking, but howl like wolves,

or

\* See plate XXV.

† Plate XLI.

‡ Plate XXX.

|| Hist. gen. des Voyages, par M. l'Abbé Prevost, tom. 4.  
p. 229.

or yelp like foxes. This change seems to make them approach to their natural state; for both their figure and instincts are altered: They assume an ugly aspect, and their ears become erect and pointed \*. It is only in temperate climates that dogs preserve their ardour, courage, sagacity, and other talents. They lose every thing, when transported to very hot countries. But, as if Nature never made any being perfectly useless, in climates where dogs cannot serve the purposes for which we employ them, they are in great request for the table, and their flesh is preferred by the Negroes to that of all other animals. They sell dogs in the market as dear as mutton, venison, or game of any kind, a roasted dog being the most luxurious feast to a Negro. Perhaps this remarkable appetite for dogs flesh is owing to a change produced in its quality by the heat of the country; for, in our climates, it is extremely disagreeable. But I am inclined to think that this appetite depends more on the nature of man than that of the dog; for the savages of Canada, who inhabit a cold country, are as fond of dogs flesh as the Negroes; and our missionaries sometimes eat of it without disgust. P. Sabard Theodat remarks, ‘ that dogs are used, as  
‘ we

\* Voyage de la Boullaye le-Gouz, p. 257.; Voyages de Jean Ovington, tom. I. p. 276.; Histoire universelle des voyages, par du Perrier de Montfraier, p. 344. et suivantes; Vie de Christophe Colomb. part I. p. 106.; Voyage de Bosman en Guinée, &c. p. 240.; Histoire generale des voyages, par M. l’Abbé Prevost, tom. IV. p. 229.

' we use mutton, at feasts. I have several times  
' been present at these dogs-feasts, which at first  
' struck me with a degree of horror; but, after  
' tasting it twice, I found that the flesh was good,  
' and had a flavour somewhat resembling that  
' of pork \*.

In our climates, the wolf and fox make the nearest approach to the dog, particularly to the shepherd's dog, which I consider as the original stock of the species: And, as their internal structure is almost entirely the same, and their external differences very slight, I wished to try if they would intermix and produce together. I hoped, at least, to make them copulate; and, if they produced not fertile individuals, I expected to procure mules which would participate of the nature of both animals. With this view, I reared a she-wolf, taken in the woods at the age of three months, along with an Irish grey-hound of the same age. They were shut up together in a pretty large court, to which no other beast could have access, and where they were provided with a shelter for their retirement. They were equally strangers to any individual of their own species, and knew no person but the man who gave them their victuals. They were kept in this state three years, without the smallest restraint. During the first year, they played perpetually, and seemed to be extremely fond of each other. The

second

\* Voyage au pays des Hurons, par le P. Sabard Theodat, p. 311.

second year they began to quarrel about their food, though they were supplied in a plentiful manner. The wolf always began the dispute. When meat and bones were given them on a large wooden dish, the wolf, instead of seizing the meat, instantly drove off the dog, then laid hold of the edge of the plate so dexterously as to allow nothing to fall, and carried off the whole. I have seen her run, in this manner, with the dish in her teeth, five or six times round the wall, and never set it down, unless to take breath, to devour the meat, or to attack the dog, when he approached. The dog was stronger than the wolf: But as he was less ferocious, we began to be apprehensive of his life, and therefore furnished him with a collar. After the second year, these quarrels and combats became more frequent, and more serious, and a collar was also given to the wolf, whom the dog now handled more roughly than before.

During these two years, not the smallest symptom of desire appeared either in the one or the other. At the end of the third year, they began to feel all the ardour of passion; but discovered no marks of love. This condition, instead of softening and making them approach each other, rendered them more untractable and ferocious. Nothing now was heard but dismal howlings, and cries of resentment. In three weeks they were both very meagre; but never approached except to tear each other. At last they fought



fought so cruelly that the dog killed the wolf. The dog was shot some days after, because, as soon as he was set at liberty, he sprung with fury upon poultry, dogs, and even men.

I had, at the same time, three young foxes, two males and a female, which were taken with nets, and kept in separate apartments. One of them was secured by a long, light chain, and a hut was built for sheltering him. I kept him several months; and, though he had a melancholy air, and kept his eyes fixed upon the fields, of which he had a view from his hut, yet both his health and appetite were good. A bitch in season was presented to him; but, as she would not remain near the fox, she was chained in the same place, and both were amply provided with victuals. The fox neither bit nor maltreated her. During ten days that they lived together, there was not the smallest quarrel, neither night nor day, nor during the time of feeding. The fox even approached her pretty familiarly; but, as soon as he had scented her too near, the mark of desire disappeared, he mournfully returned to his hut, and no commixture took place. When the ardour of this bitch was gone, another, and afterwards a third, and a fourth, were successively presented to him. He treated them with the same gentleness, and the same indifference. To ascertain whether this indifference was owing to a natural repugnance, or to a state of restraint, he was furnished with a female of his  
his

his own species, which he covered more than once the first day. The female was dissected some weeks after, and four foetus's were found in the uterus. The male fox was then let loose in a close court, and successively furnished with several bitches in season : He discovered neither hatred nor love to them ; and he died of chagrin and melancholy a few months afterwards.

From these experiments we learn, that the wolf and fox are very different in their natures from the dog ; that their species are so distinct and remote from each other, as to prevent their commixture, at least in our climates ; that, consequently, the dog derives not his origin from the wolf or the fox ; and that the nomenclators \*, who regard these two animals as wild dogs, or who imagine the dog to be a wolf or a fox become domestic, and give the whole three the common name of *Dog*, have deceived themselves by not sufficiently studying Nature †.

In

\* *Canis cauda sinistrorsum recurvata, the dog. Canis cauda incurvata, the wolf. Canis cauda recta, apice albo, the fox. Linn. Syst. p. 59.*

† Here the ingenious author seems to have made his conclusion from these experiments too general. For Mr Pennant, in his *Synopsis of Quadrupeds*, p. 144. records a recent instance of a fertile intercourse between a wolf and a bitch : His words are : ‘ Mr Brook, animal-merchant in Holburn, turned a wolf to a Pomeranian bitch in heat. The congress was immediate, and as usual between dog and bitch : She produced ten puppies. I have seen one of them that had very much the resemblance of the wolf, and much of its nature : Being slipped at a weak deer, it instantly caught at the animal’s throat, and killed

In warm climates, there is a ferocious animal which differs less from the dog than the wolf or fox: This animal, called the *Jackal*, has been well described by travellers. They are very numerous in Asia, and Africa, in the neighbourhood of Trebifond \*, round Mount Caucasus, in Mingrelia †, Natolia ‡, Hyrcania ||, Persia, India, Guiney, and at Surat §, Goa, Guzerat, Bengal, Congo \*\*, and several other places. Though this animal is considered by the natives as a wild dog, yet, as it is doubtful whether they intermix and produce together, we shall treat of the jackal, the wolf, and the dog, as separate and distinct species.

I pretend not absolutely to affirm, that the jackal, or even the wolf and fox, in no age or country, never intermixed with dogs. The contrary is asserted positively by the ancients. Aristotle †† remarks, that, though animals of different species seldom intermingle; yet it certainly happens among dogs, foxes, and wolves: He adds, that the Indian dogs proceed from another similar wild beast and the dog. This wild beast, to which he gives no name, is probably  
the

‘killed it.’—It is to be regretted, that Mr Pennant gives no information as to the fertility or sterility of these mules.

\* Voyages de Gemelli Carreri, tom. 1. p. 419. † Chardin, p. 76. ‡ Voyage de Dumont, tom. 4. p. 28. || Chardin,

tom. 2. p. 29. -§ Voyage d’Innigo de Biervillas, part. 1. p. 178.

\*\* Voyage de Bosman, p. 241. 331. Voyage du P. Zuchel, p. 293. †† Arist. de generat. animal. lib. 2. cap. 5.

the jackal. But he observes, in another place \*, that the Indian dogs proceed from a commixture between the tiger and the bitch. This notion is extremely improbable ; because the tiger, both in his form and dispositions, differs much more from the dog than the wolf, the fox, or the jackal. Aristotle indeed appears to violate his own argument ; for, after telling us, that the Indian dogs proceeded from a wild beast similar to the wolf or fox, he says afterwards, that they proceed from the tiger, without mentioning whether this conjunction was made between the tiger and bitch, or between the dog and tigress : He only adds, that the affair did not succeed till the third trial ; that the first litter consisted solely of tigers ; that dogs were chained in the deserts, and, unless the tiger was in season, they were often devoured ; that the great heat, and scarcity of water, made the production of monsters and prodigies very frequent in Africa, because numbers of animals were obliged to assemble in the same place in order to drink, where they often grew familiar and coupled together. All this seems to be not only conjectural and uncertain, but suspicious, and unworthy of credit ; for, the more narrowly we examine the nature of animals, we perceive that instinct is the most certain criterion for judging of them. By the most attentive inspection of their internal parts, we discover only slight differences.

\* Idem, hist. animal. lib. 8. cap. 28.



ferences. The horse and ass, though perfectly similar in their internal structure, are very different in their natures. The internal parts of the bull, the ram, and the he-goat, are exactly the same; yet they constitute three species more remote from each other than the ass and horse: The same remark is applicable to the dog, the fox, and the wolf. We derive more light from inspecting the external form. But as, in species which are not remote, there are, even externally, more resemblances than differences, this inspection is not sufficient to determine whether they belong to the same or to different species. In a word, when the shades are still lighter, they must be combined with the information derived from instinct. It is from the dispositions of animals that we ought to judge of their natures: If we suppose two animals perfectly similar in form, but very different in their dispositions, they would neither join nor produce together, but constitute two distinct species.

This mode of judging concerning the differences of neighbouring species, is the only one that can be employed when we want to distinguish the numerous varieties which take place in the same species. We know thirty fixed varieties of dogs, though we certainly are not acquainted with the whole. Of these thirty varieties, there are seventeen which ought to be ascribed to the influence of climate, namely, the shepherd's dog, the Pomeranian dog, the Siberian

rian dog, the Iceland dog, the Lapland dog, the Irish grey-hound, the common grey-hound, the mastiff, the great Danish dog, the hound, the harrier, the terrier, the spaniel, the water dog, the small Danish dog, the Turkish dog, and the bull-dog. The other thirteen, which are the mongrel Turkish dog, the grey-hound with hair like an wolf, the flock-dog, or lap-dog, the bastard pug-dog, the pug-dog, the Calabrian, Burgos, and Alicant dogs, the lion-dog, the small water dog, the dog of Artois, and the King Charles's dog, are nothing but mongrels produced by the commixture of the above seventeen races; and, by tracing each of these mongrels back to the two races from which they sprung, their natures will then be sufficiently ascertained. But, if we want to know the relations which subsist between the first seventeen races, we must attend to their instincts, their figure, and many other circumstances. I have put into one group the shepherd's dog, the Pomeranian dog, the Siberian dog, the Lapland and Iceland dogs, because a stronger resemblance takes place between them than between any of the other kinds, and because all of them have sharp muzzles like the fox, erect ears, and an instinct which induces them to follow and protect flocks. The grey-hound, the large Danish dog, and the Irish grey-hound, have, beside their similarity in figure and length of muzzle, the same dispositions: They are fond of running, and of following horses and carriages. They have

have little scent, and hunt rather by the eye than the nose. The hounds, the harriers, the spaniels, the terriers, and the water dogs, are the true hunting dogs. Though they differ a little in figure, they have all thick muzzles, and the same instincts; and therefore they ought to be ranked together. The spaniel, for example, has been called by some naturalists, *canis aviarius terrestris*, and the water-dog, *canis aviarius aquaticus*. The only difference in disposition between these two dogs is, that the water-dog, with his long bushy hair, takes the water more chearfully than the others, whose hair is smooth and short. Lastly, the small Danish dog and the Turkish dog must be joined together, since the latter is said to be the same dog with the former, only deprived of his hair by the effects of heat. There remains only the bull-dog, which, from the shortness of his muzzle, resembles the little Danish dog, but differs from him so much, both in figure and instinct, as to form a particular variety. He seems also to affect a particular climate: He comes from Britain, and it is difficult to preserve the breed in France. The mongrels that proceed from him, which are the mastiff and the pug-dog, succeed better. All these dogs have very short muzzles, little scent, and often send forth a disagreeable smell. The fineness of the scent seems to depend more on the largeness than the length of the muzzle; for the grey-hound, the large Danish dog, and the Irish

Irish grey-hound, have less scent than the hound, the harrier, the terrier, the spaniel, or the water-dog, who have all, in proportion to their size, shorter, but broader muzzles, than the former.

The greater or less perfection of the senses forms not, in man, an eminent or remarkable quality; but bestows on the other animals all their merit, and produces, as a cause, all the talents of which they are susceptible. I mean not to enumerate all the qualities of hunting dogs. The superiority they possess over other animals, by the excellence and acuteness of their sense of smelling, is well known. But details of this kind are remotely connected with natural history. Besides, the artifices and dexterity, though derived solely from Nature, employed by wild animals to conceal themselves, or to avoid the pursuit of the dogs, are perhaps more worthy of admiration than the most refined methodical exhibitions derived from the art of hunting.

The dog, like every other animal which produces above one or two at a time, is not perfectly formed immediately after birth. Dogs are commonly brought forth blind. The two eyelids are not simply glued together, but shut up with a membrane, which is torn off as soon as the muscles of the upper eye-lid acquire strength sufficient to overcome this obstacle to vision, which generally happens about the tenth or



twelfth day. At this period the bones of the head are not completed, the body and muzzle are turgid, and the whole figure is ill defined. But, in less than two months, they learn to use all their senses; their growth is rapid, and they soon acquire strength. In the fourth month, they lose some of their teeth, which, as in other animals; are soon replaced, and never again fall out. The number of teeth is forty-two, namely, six cutting and two canine teeth in each jaw, and fourteen grinders in the upper and twelve in the under. But the number of grinders is not uniform, being greater or less in particular dogs. When very young, both males and females squat down a little to void their urine: In the ninth or tenth month, they begin to raise the thigh when they perform this operation; and, at the same period, they acquire the capacity of procreating. The male is ready at all times; but the female receives him only at certain fixed seasons, which generally happen twice a-year, and more frequently in winter than in summer. The ardour of the female continues ten, twelve, and sometimes fifteen days; and it is known by external signs, which appear some days before she admits the male: The parts become moist and prominent; and this phaenomenon is always accompanied with a small flux of blood. The male discovers the condition of the female by a peculiar smell; but she seldom receives him for the first six or seven days.

days. One embrace is sometimes sufficient to make her conceive a great number of young ; but, when not restrained, she will admit several dogs every day. She seems to have no predilection, except in favour of the largest dogs, without regarding their figure or beauty. Hence it frequently happens, that a small female, who has admitted a large male, dies in bringing forth her young.

By a peculiarity in these animals, arising from the structure of their organs, they are incapable of separating, after consummation, but are obliged to remain united as long as the erection subsists. The dog, like several other animals, has not only a bone in the penis, but, in the middle of the corpus cavernosum, there is a large hollow ring, which, in time of copulation, swells to a considerable size. The female, on the other hand, has a larger clitoris than perhaps any other animal ; besides, in the time of coition, a large firm protuberance arises, and remains, perhaps, longer than that of the male, and prevents him from retiring till it subsides ; for, immediately after consummation, he changes his position, in order to repose on his four legs ; his aspect is melancholy, and the efforts for separation never proceed from the female.

The time of gestation is nine weeks, or 63 days, sometimes 62 or 61, but never less than 60. The females produce six, seven, and sometimes even twelve puppies. The largest and

tallest are more prolific than the smaller kinds, which often produce only four or five, and sometimes but one or two, especially at the first litters, which, in all animals, are always less numerous than the subsequent.

Dogs, though extremely ardent in their amours, continue to propagate during life, which is generally limited to fourteen or fifteen years, though some have been known to live to the age of twenty. The duration of life in the dog, as in other animals, is proportioned to the time of his growth, which is not completed in less than two years, and he lives fourteen. His age may be discovered by his teeth, which, when young, are white, sharp, and pointed: But, as he increases in years, they become black, blunt, and unequal. It may likewise be known by the hair, which turns gray on the muzzle, front, and round the eyes.

These animals, which are naturally vigilant, active, and frolicsome, by being over-fed in our houses, become so heavy and slothful, that they pass their lives in sleeping and eating. Their sleep, which is almost perpetual, is accompanied with dreams, which is perhaps a gentle mode of existing. They are naturally voracious; and yet they can endure very long abstinence. In the Memoirs of the Academy of Sciences, we have the history of a bitch, that, having been forgot in a country-house, lived forty days, without any other nourishment than the wool of a matress,

treſs, which ſhe had torn to pieces\*. Water ſeems to be more neceſſary to dogs than victuals; for they drink often and very plentifully: It is even a vulgar opinion, that, when they want water too long, they become mad. It is alſo a peculiarity in dogs, that they make great efforts, and ſeem to ſuffer much pain, in voiding their excrement. This happens not, as Aristotle alledges †, becauſe their inteſtines become narrower in approaching the anus. On the contrary, it is certain, that, in the dog, as in other animals, the great inteſtines enlarge as they proceed downward, and that the rectum is larger than the colon. The dry temperament of this animal, and not the ſtrangulations of the colon, which are too diſtant from the rectum, is ſufficient to produce this effect.

To give a clear idea of the different kinds of dogs, of their degeneration in particular climates, and of the mixture of their races, I have ſubjoined a table, or genealogical tree, in which all theſe varieties may be eaſily diſtinguiſhed. This tree is drawn in the form of a geographical chart, preſerving as much as poſſible the poſition of the different climates to which each variety naturally belongs. The ſhepherd's dog is the root of the tree. This dog, when tranſported into Lapland, or other very cold climates, aſſumes an ugly appearance, and ſhrinks into a

C 3 ſmaller

\* Hiſt. de l'Acad. des ſciences, année 1706, p. 5.

† Ariſt. de partibus animal. lib. ult.



smaller size. But, in Russia, Iceland, and Siberia, where the climate is less rigorous, and the people a little more advanced in civilization, he seems to be better accomplished. These changes are occasioned solely by the influence of those climates, which produce no great alteration in the figure of this dog; for, in each of these climates, his ears are erect, his hair thick and long, his aspect wild, and he barks less frequently, and in a different manner, than in more favourable climates, where he acquires a finer polish. The Iceland dog is the only one that has not his ears entirely erect; for their extremities are a little inclined; and Iceland, of all the northern regions, has been longest inhabited by half civilized men.

The same shepherd's dog, when brought into temperate climates, and among a people perfectly civilized, as Britain, France, Germany, would, by the mere influence of the climate, lose his savage aspect, his erect ears, his rude, thick, long hair, and assume the figure of a bull-dog, the hound, and the Irish grey-hound. The bull-dog and Irish grey-hound have their ears still partly erect, and very much resemble, both in their manners and sanguinary temper, the dog from which they derive their origin. The hound is farthest removed from the shepherd's dog; for his ears are long and entirely pendulous. The gentleness, docility, and even the timidity of the hound, are proofs of his great degeneration,

generation, or rather of the great perfection he has acquired by the long and careful education bestowed on him by man.

The hound, the harrier, and the terrier, constitute but one race ; for, it has been remarked, that, in the same litter, hounds, harriers, and terriers, have been brought forth, though the female hound had been covered by one of these three dogs only. I have joined the common harrier to the Dalmatian dog, or harrier of Bengal, because they differ only in having more or fewer spots on their coat. I have also linked the turnspit, or terrier with crooked legs, with the common terrier ; because the defect in the legs of the former has originally proceeded from a disease similar to the rickets, with which some individuals had been affected, and transmitted the deformity to their descendants.

The hound, when transported into Spain and Barbary, where all animals have fine, long, bushy hair, would be converted into the spaniel and water-dog. The great and small spaniel, which differ only in size, when brought into Britain, have changed their white colour into black, and become, by the influence of climate, the great and little King Charles's dog: To these may be joined the Pyrame\*, which is only a King Charles's dog, black like the others, but marked with red on the four legs, and a spot of

\* This dog, though very common in Britain, has no English name.

the same colour above each eye, and on the muzzle.

The Irish grey-hound, transported to the north, is become the great Danish dog; and, when carried to the south, was converted into the common grey-hound. The largest grey-hounds come from the Levant, those of a smaller size from Italy; and those Italian grey-hounds, carried into Britain, have been still farther diminished.

The great Danish dog transported into Ireland, the Ukraine, Tartary, Epirus, and Albania, has been changed into the Irish grey-hound, which is the largest of all dogs,

The bull-dog, transported from Britain to Denmark, is become the little Danish dog; and the latter, brought into warm climates, has been converted into the Turkish dog. All these races, with their varieties, have been produced by the influence of climate, joined to the effects of shelter, food, and education. The other dogs are not pure races, but have proceeded from commixtures of those already described. I have marked, in the table, by dotted lines, the double origin of these mongrels.

The grey-hound, and Irish grey-hound, have produced the mongrel grey-hound, called also the grey-hound with wolf's hair. The muzzle of this mongrel is less pointed than that of the true grey-hound, which is very rare in France.

The

The great Danish dog, and the large spaniel, have produced the Calabrian dog, which is a beautiful animal, with long bushy hair, and as large as the Irish grey-hound.

The spaniel and terrier have produced the dog called *Burgos*.

From the spaniel and little Danish dog, has proceeded the lion-dog, which is now very rare.

The dogs with long, fine, crisped hair, called the *Bouffe* dogs, and which are larger than the water-dog, proceed from the spaniel and water-dog.

The little water-dog comes from the water-dog and small spaniel.

From the bull-dog and Irish grey-hound, proceeds a mongrel called the *mastiff*, which is larger than the bull dog, and resembles the latter more than the Irish grey-hound.

The pug-dog proceeds from the bull-dog and small Danish dog.

All these dogs are simple mongrels, and are produced by the commixture of two pure races. But there are other dogs, called *double mongrels*, because they proceed from the junction of a pure race with a mongrel.

The bastard pug-dog is a double mongrel from a mixture of the pug-dog with the little Danish dog.

The Alicant dog is also a double mongrel, proceeding from the pug-dog and small spaniel.

The



The Maltese, or lap-dog, is a double mongrel, produced between the small spaniel and little water-dog.

Lastly, there are dogs which may be called *triple mongrels*, because they are produced by two mixed races. Of this kind are the Artois and Iffois dogs, which are produced by the pug-dog and the bastard pug-dog, to which may be added the dogs called *street-dogs*, which resemble no particular kind, because they proceed from races which have previously been several times mixed.

## S U P P L E M E N T.

M. de Mailly, of the academy of Dijon, well known by several ingenious performances, communicated to me a fact, which merits a place in the Natural history of the dog. The following is an extract of his letter upon this subject, dated October 6. 1772.

‘ The curate of Norges, near Dijon, had a  
 ‘ bitch, which, without either having ever been  
 ‘ pregnant, or delivered of puppies, had all the  
 ‘ symptoms which characterise these two states.  
 ‘ She came in season at the usual period; but  
 ‘ never had any connections with a male.  
 ‘ When the common term of gestation was finished,  
 ‘ her paps were distended with milk,  
 ‘ without

without being irritated by any particular treatment ; for it is possible to bring milk into the dugs of animals by frequently chafing them. But, in this case, every thing was the effect of Nature ; and this bitch suckled some young puppies with which she was furnished, and for whom she discovered as much tenderness and attention, as if she had been their real mother. All this I saw with my eyes. But, what is still more singular, this same bitch, about three years ago, suckled two young cats, one of which participated so much of the nature of its nurse, that its cries had more resemblance to the barking of a dog, than to the mewling of a cat.

If the production of milk, without impregnation, were more frequent among quadrupeds, it would make them analogous to female birds, which lay eggs without the assistance of the male.

## OF THE VARIETIES OF DOGS.

A few years ago, at the fair of Saint Germain, there was a Siberian dog, which appeared to differ so much from that represented in Plate XXIX. as to merit a short description. It was covered with long hair, hanging almost down to the ground. At first sight it resembled a large lion-dog ; but its ears were erect, and much larger.

Its

Its colour was all white, and its length, from the nose to the extremity of the body, was 21 inches and a half; and its height behind was 11 inches nine lines, and 11 inches three lines before. The eye was of a brown chesnut colour, and the end of the nose, as well as round the nostrils and mouth, were black. The ears were bushy, of a whitish yellow within, and yellow on the edges and extremities. The long hair of its head partly concealed the eyes, and fell down upon the nose. Its toes and claws were also hid by the hair of its legs. The tail, which turned up like that of the Pomeranian dog, was covered with hair about seven or eight inches long. Of all dogs this is certainly the roughest furred.

Other dogs, brought to Paris by the Russians, which they called *Siberian dogs*, belonged to a very different race from the preceding. Both male and female were about the size of an ordinary grey-hound. The nose was sharp, the ears half erect, but bended a little in the middle. They were not slender like the grey-hound, but round and full below the belly. Their tail was about eight or nine inches in length, pretty thick, and obtuse at the extremity. Their colour was black, without any mixture of white hairs; but the female had a gray tuft on the middle of the head, and the male a tuft of the same colour at the end of the tail. They were troublesome with their caresses, and so voracious, that they could never be fatiated. They were,  
at

at the same time, insufferably dirty, and perpetually roaming about in quest of food. Their legs were tolerably handsome; but their feet were large and broad, and their toes united by a membrane. Their voice was very strong; they had no inclination to bite; they caressed every person indiscriminately; and their vivacity was inexpressible \*. From this description, it appears, that these pretended Siberian dogs are of the same race with that I have called the Iceland dog, whose figure is engraven Plate XXX. which exhibits a number of the characters mentioned in the above delineation.

‘ I have made some inquiry,’ says Mr Colinson, ‘ concerning the dogs of Siberia. Those which draw sleds and carts are of a middle size : Their nose is sharp, and their ears long and erect. They carry their tail bended, some of them like the wolf, and others like the fox; and it is certain, that they copulate with wolves and foxes. I see, from your experiments, that, when these animals are confined, they will not intermix; but, when at full liberty, they willingly come together. With regard to the dog and wolf, I myself have seen them couple in England. But I have never met with any person who saw dogs and foxes intermingle. However, from a kind I saw produced from a bitch, which had lived at freedom in the woods,

I

\* Extracted from a letter of M. Pafumot of the academy of Dijon, to M. de Buffon, dated March 2. 1775.



‘ I have no doubt that she had been impregnated  
 ‘ by a fox. The peasants know this species, and  
 ‘ distinguish it by the name of *fox-dogs*.’

Most of the Greenland dogs are white ; but some of them are black, with very bushy hair. They rather may be said to howl than bark ; and they are stupid, and unfit for every species of hunting. They serve, however, for dragging sleds, to which they are yoked by fours and sixes. The Greenlanders eat the dogs flesh, and make garments of his skin \*.

The dogs of Kamtschatka are rude, and half savage, like their masters. They are commonly black or white, and more nimble and active than our dogs. They are great eaters of fish, and are used for drawing sleds. In summer, they have their liberty ; but are collected together in the month of October, for the purpose of drawing the sleds ; and, during winter, they are fed with a kind of paste composed of fish, which is allowed to ferment in a ditch, and given to them half boiled †.

From these facts, it appears, that the Greenland and Kamtschatkan dogs, and perhaps those of other northern regions, have a greater resemblance to the Iceland dog, than to any of the other races ; for the above description of the two Russian dogs, as well as the notices concerning those of Greenland and Kamtschatka, correspond very

\* Hist. des voyages, tom. 19. p. 39.

† Ibid. p. 39.

very well, and may be equally applied to our Iceland dog.

Though we have described all the varieties which we could collect, there are still some which could not be procured. For example, there is a race of wild dogs, of which I have seen two individuals, but had not an opportunity of either describing or delineating them. The ingenious and learned M. Aubry, curate of Saint Louis, has often furnished us with animals of which we had no knowledge. He informs us, that, a few years ago, he saw a dog, nearly of the size of a spaniel, which had long hair, and a large beard on its chin. This dog was produced from parents of the same race with those which had formerly been sent to Louis XIV. by M. le Comte de Toulouse. M. le Comte de Laffai had also some of these dogs; but I know not what has become of this singular race.

With regard to the wild dogs, among which there are different races, as well as among the domestic kinds, I have little to add to what I have said in my original work. M. le Vicomte de Querhoënt has been so obliging as to communicate to me a note with regard to the wild dog found in the environs of the Cape of Good Hope. He remarks, ‘ That, at the Cape, there are numerous packs of wild dogs, as large as our largest kinds, whose skin is marked with various colours. They have erect ears, run with great swiftness, and have no fixed residence. They

‘ They destroy an incredible quantity of deer.  
‘ They are seldom slain, and very difficult to take  
‘ in snares ; for they have an aversion to ap-  
‘ proach any thing that has been touched by  
‘ man. As their young are sometimes met with  
‘ in the woods, attempts have been made to ren-  
‘ der them domestic ; but they are so large, and  
‘ so ferocious, that these attempts have always  
‘ been abortive.’

T H E





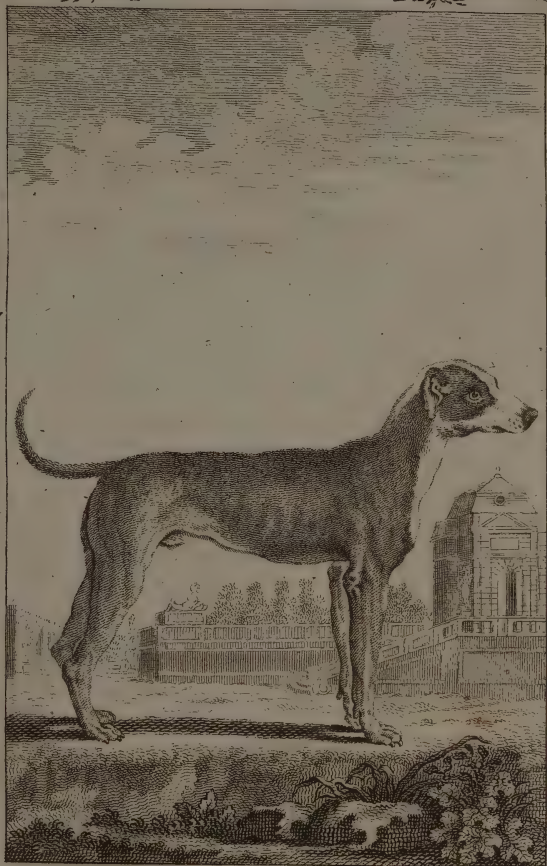
Plate XXVI.



*A. Bell Sculp.*

IRISH GRE-HOUND

Plate XXVII



*A. Bell Sculp.*

DANISH DOG



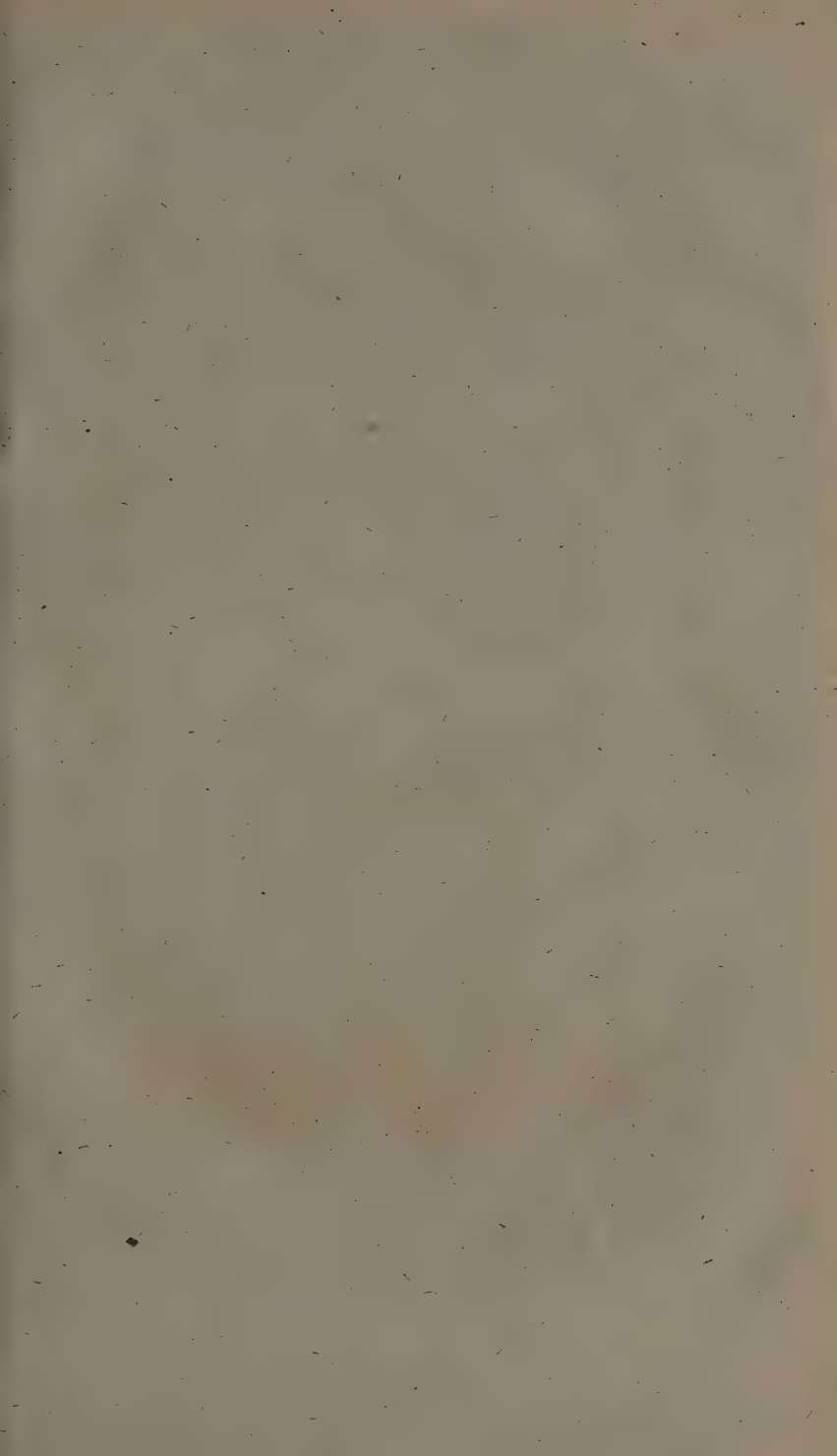




Plate XXVIII.



*A Bell Sculp.*  
COMMON GRE-HOUND

Plate XXIX..



*A Bell Sculp*

SHEPHERD'S DOG







Plate XXX.



WOLF or POMERANIAN DOG

Plate XXXI.



*A. Bell Sculp.*

SIBERIAN DOG





Plate XXXII.

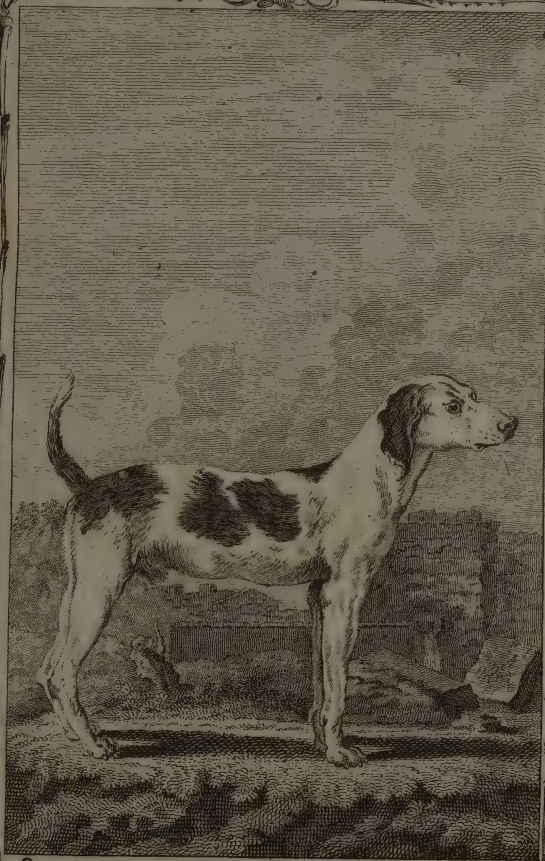


*A. Bille sculpt.*

ICELAND DOG



Plate XXXIII.



*A. Bell sculpt.*

HOUND





Plate XXXIV.



HARRIER

Plate XXXV.



*A. Bell sculp.*

DALMATIAN DOG or HARRIER of BENGAL







Plate XXXVI.



TURNSPIT



*A Bell Sculp.*  
VARIETY of the TURNSPIT

Plate XXXVII.



*A. Bell & Co. sculp.*

(MONGREL HOUND)





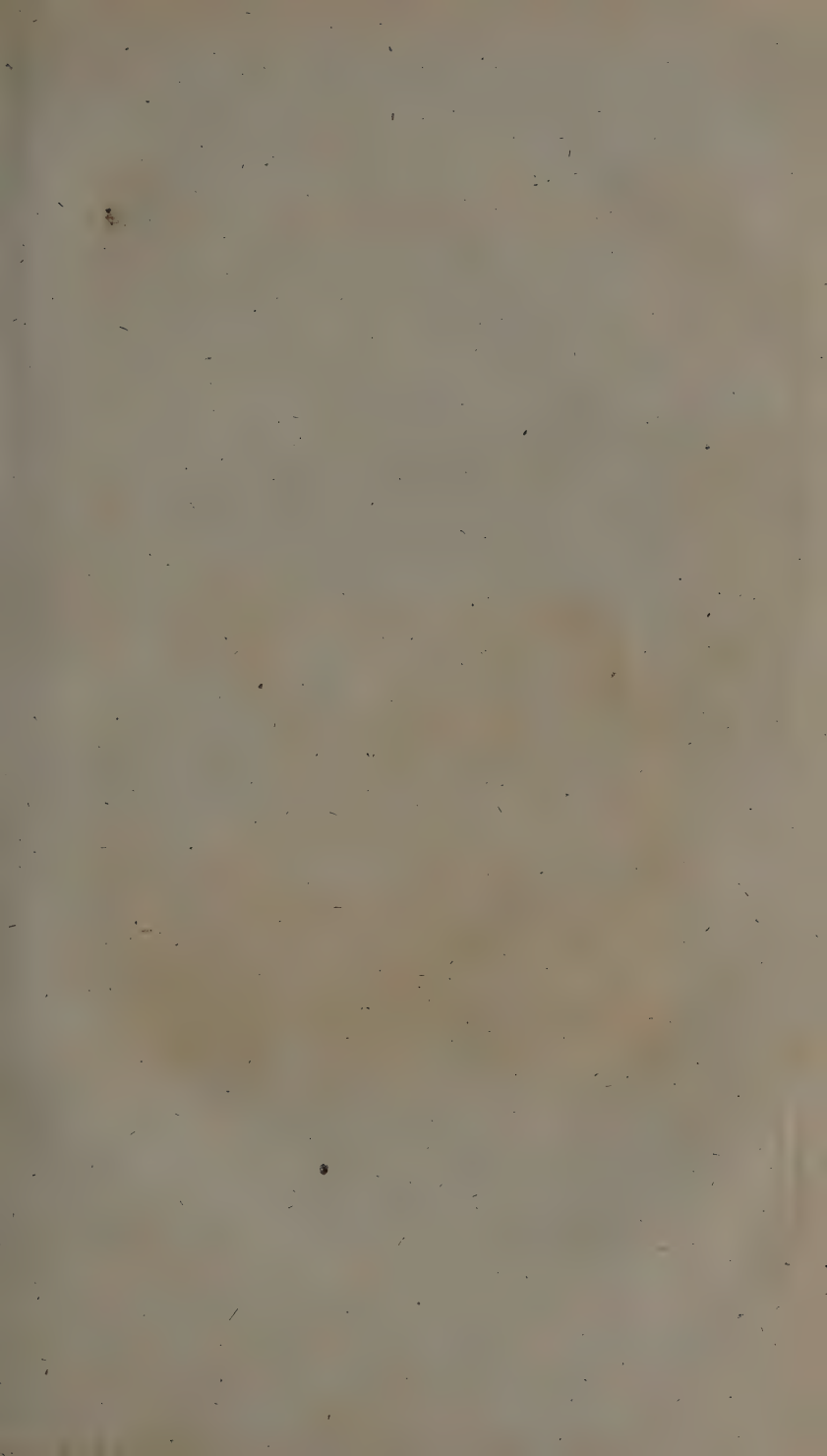


Plate XXXVIII.



*A. Bell Sculp.*

GREAT WATER DOG.

Plate XXXIX.



SPANIEL.



LESSER WATER DOG.

*A. Bell sculp.*

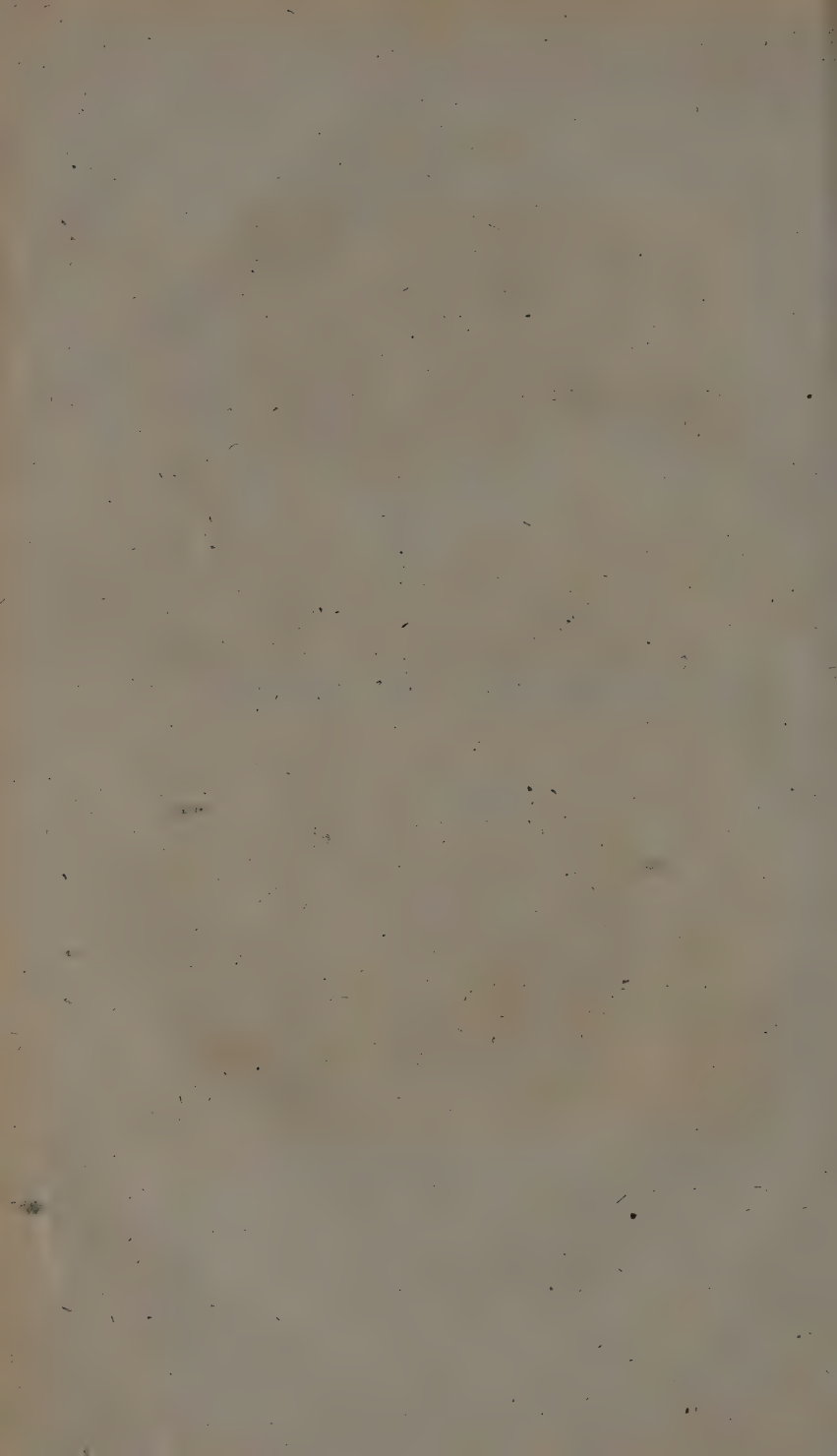






Plate XL.



KING CHARLES'S DOG



PYRAME DOG

*A Bell Sculp<sup>t</sup>*

Plate XL.



SHOCK DOG.



LION DOG.

*A Bell Sculpt.*

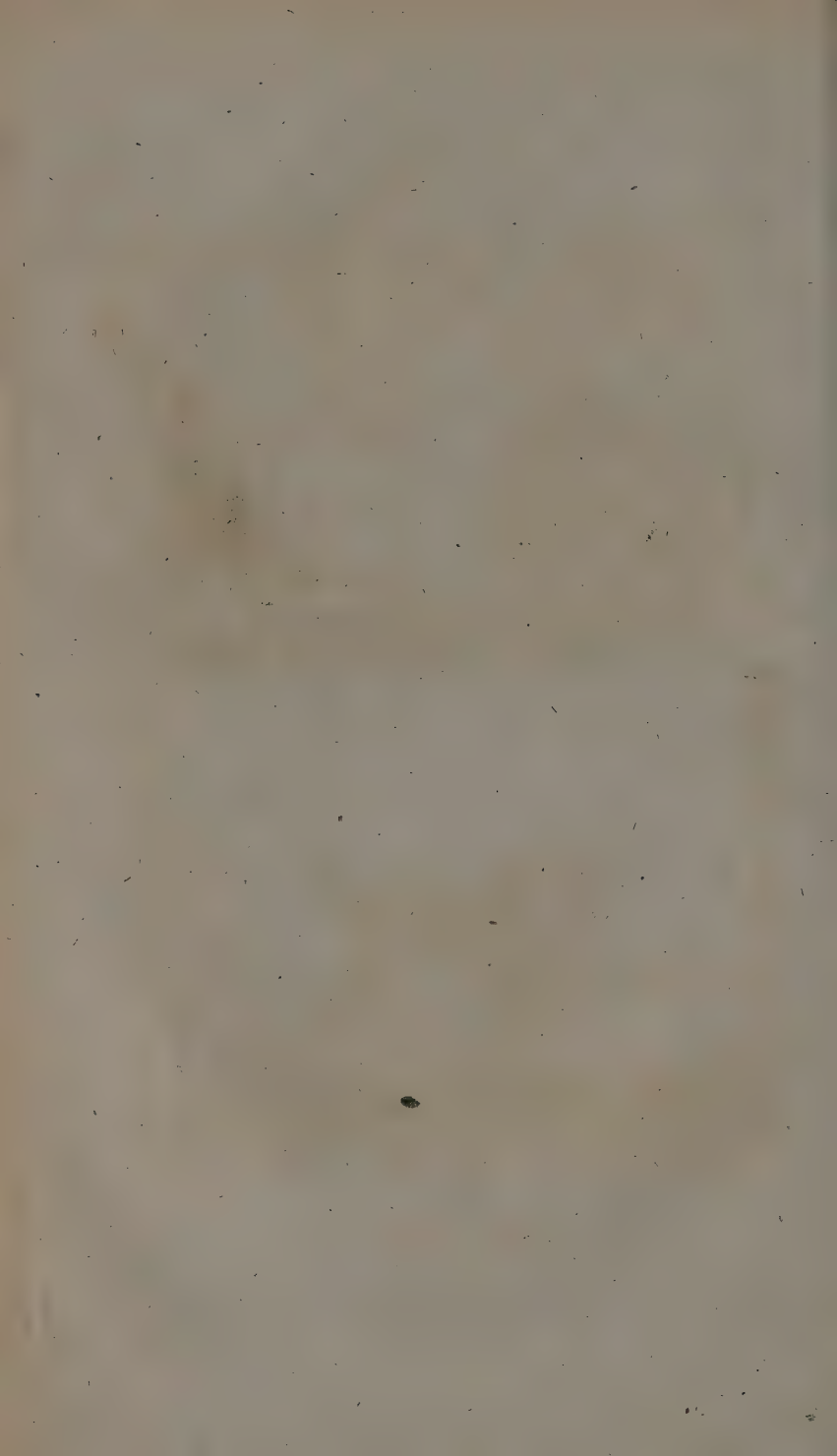




Plate XLII.



SMALL DANISH DOG



BASTARD PUG DOG

*A Bell's Sculp.*



Plate XLIII.



NAKED OR TURKISH DOG



MONGREL or TURKISH DOG

*A Bell Sculpt.*





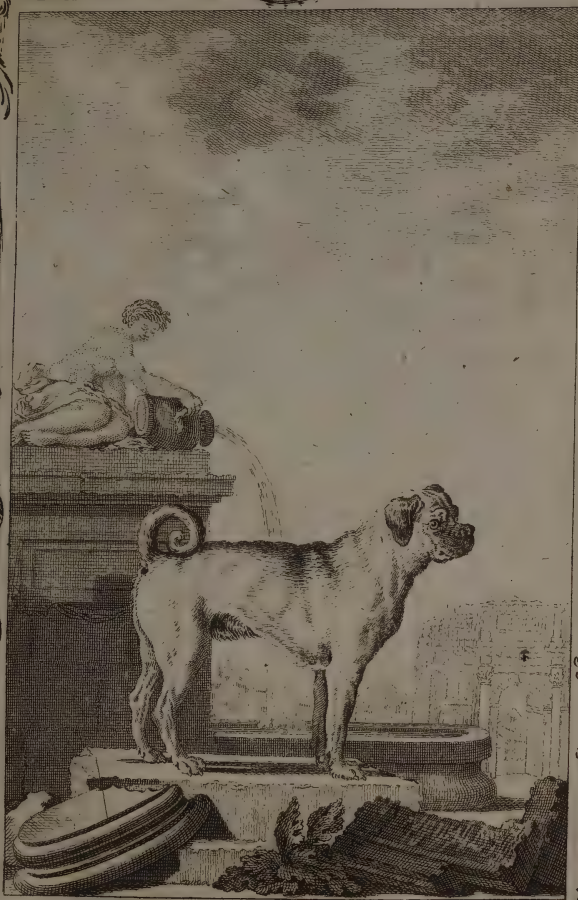
Plate XLIV.



*W. Bell Sculp<sup>t</sup>*

BULL DOG

Plate XLV.



PUG DOG

*A Bell Sculp.<sup>t</sup>*





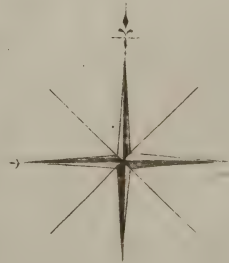
Plate XLVI.



MASTIFF DOG

*A Bell Sculp.*





e' L. Bellewidge.





# T H E C A T \*.

**T**H E cat is an unfaithful domestic, and kept only from the necessity we find of opposing him to other domestics still more incommodious, and which cannot be hunted; for we value not those people, who, being fond of all brutes, foolishly keep cats for their amusement. Though these animals, when young, are frolicksome and beautiful, they possess, at the same time,

VOL. IV. D time,

\* The cat has six cutting teeth, and two canine in each jaw; five toes before, and four behind; sharp hooked claws, lodged in a sheath, that may be exerted or drawn in at pleasure; a round head, short visage, and rough tongue. The wild cat has long soft hair, of a yellowish white colour, mixed with gray; the gray is disposed in streaks, pointing downwards, and rising from a dusky list, which runs from head to tail, along the middle of the back; the tail is marked with alternate bars of black and white, and its tip, and the hind part of the legs, are black. It is three times as large as the domestic cat, and very strongly made; *Pennant. synop. of quad.* p. 183.

*Charact. gen.* Dentes primores aequales; molares terni. Lingua retrorsum aculeata. Ungues retractiles. *Charact. spec.* Felis catus, cauda elongata fusco-annulata, corpore fasciis nigricantibus; dorsaliibus longitudinalibus tribus; lateraliibus spiraliibus; *Lyn. syst. nat.* p. 62.

Catus sylvestris; *Gesner. quad.* 325.

Catus sylvestris ferus vel feralis, eques arborum; *Klein. quad.* p. 75

Felix ex fusco, flavicante, et albido, variegatis vestita; cauda annulis alternatim nigris, et ex fordide albo flavicantibus cincta; *Briffon. quad.* 192.

time, an innate malice, and perverse disposition, which increase as they grow up, and which education learns them to conceal, but not to subdue. From determined robbers, the best education can only convert them into flattering thieves; for they have the same address, subtlety, and desire of plunder. Like thieves, they know how to conceal their steps and their designs, to watch opportunities, to catch the proper moment for laying hold of their prey, to fly from punishment, and to remain at a distance till solicited to return. They easily assume the habits of society, but never acquire its manners; for they have only the appearance of attachment or friendship. This dissingenuity of character is betrayed by the obliquity of their movements, and the duplicity of their eyes. They never look their best benefactor in the face; but, either from distrust or falseness, they approach him by windings, in order to procure caresses, in which they have no other pleasure than what arises from flattering those who bestow them. Very different from that faithful animal the dog, whose sentiments totally centre in the person and happiness of his master, the cat appears to have no feelings which are not interested, to have no affection that is not conditional, and to carry on no intercourse with men, but with the view of turning it to his own advantage. By these dispositions, the cat has a greater relation to man than

than to the dog, in whom there is not the smallest mark of insincerity or injustice.

The form and temperament of the cat's body perfectly accord with his temper and dispositions. He is jolly, nimble, dexterous, cleanly, and voluptuous. He loves ease, and chooses the softest and warmest situations for repose. He is likewise extremely amorous, and, what is singular in this animal, the female seems to be more ardent than the male. She not only invites and goes in quest of him, but announces, by loud cries, the fury of her passion, or rather the pressure of her necessities; and, when the male disdains her, or flies from her, she pursues, tears, and, though their embraces are always accompanied with the most acute pain, compels him to comply with her desires. This passionate ardour of the female continues only nine or ten days, and it happens generally twice a-year, though often thrice, and even four times. The period of gestation is 55 or 56 days, and four or five are commonly produced at a litter. As the male has an inclination to devour the young, the female carefully conceals them; and, when apprehensive of a discovery, she takes them up, one by one, in her mouth, and hides them in holes, and in inaccessible places. After suckling them a few weeks, she presents them with mice, or young birds, to learn them to eat flesh. But, by an unaccountable caprice, these same careful, tender, and affectionate mothers, some-

times assume an unnatural species of cruelty, and devour their own offspring.

Young cats are gay, vivacious, and frolicksome, and, if nothing was to be apprehended from their claws, would afford excellent amusement to children. But their toying, though always light and agreeable, is never altogether innocent, and is soon converted into habitual malice. As their talents can only be exerted with advantage against small animals, they lie in wait, with great patience and perseverance, to seize birds, mice, and rats, and, without any instruction, become more expert hunters than the best trained dogs. Naturally averse to every kind of restraint, they are incapable of any system of education. It is related, however, that the Greek Monks of the island of Cyprus had trained cats to hunt and destroy serpents, with which that island was much infested \*. But this hunting must rather be ascribed to their general desire of slaughter, than to any kind of tractability or obedience; for they delight in watching, attacking, and destroying all weak animals indiscriminately, as birds, young rabbits, hares, rats, mice, bats, moles, frogs, toads, lizards, and serpents. They have not that docility and fineness of scent, for which the dog is so eminently distinguished. They hunt by the eye only: Neither do they properly pursue, but lie in wait, and attack animals by surprise; and, after sporting with them,

and

\* Descript. des îles de l'Archipel, par Dapper, p. 51.



and tormenting them for a long time, they at last kill them without any necessity, and even when well fed, purely to gratify their sanguinary appetite.

The most obvious physical cause of their watching and catching other animals by surprise, proceeds from the advantage they derive from the peculiar structure of their eyes. In man and most other animals, the pupil is capable of a certain degree of contraction and dilatation. It enlarges a little when the light is faint, and contracts when the light is too splendid. But, in cats and night birds, as owls, &c. the contraction and dilatation are so great, that the pupil, which is round in the dark, becomes, when exposed to much light, long and narrow like a line. Hence these animals see better in the night than in the day. The pupil of the cat, during the day, is perpetually contracted, and it is only by a great effort that he can see with a strong light. But, in the twilight, the pupil resumes its natural roundness, the animal enjoys perfect vision, and takes advantage of this superiority to discover and surprise his prey.

Though cats live in our houses, they are not entirely domestic. Even the tamest cats are not under the smallest subjection, but may rather be said to enjoy perfect liberty; for they act to please themselves only; and it is impossible to retain them a moment after they choose to go off. Besides, most cats are half wild. They know



not their masters, and only frequent barns, offices, or kitchens, when pressed with hunger.

Though greater numbers of them are reared than of dogs, as they are seldom seen, their number makes less impression on us. They contract a stronger attachment to our houses than to our persons. When carried to the distance of a league or two, they return of their own accord, probably because they are acquainted with all the retreats of the mice, and all the passages and outlets of the house, and because the labour of returning is less than that which would be necessary to acquire the same knowledge in a new habitation. They have a natural antipathy at water, cold, and bad smells. They are fond of basking in the sun, and of lying in warm places. They are also fond of perfumes, and willingly allow themselves to be taken and caressed by persons who carry aromatic substances. They are so delighted with valerian root, that it seems to throw them into a transport of pleasure. To preserve this plant in our gardens, we are under the necessity of fencing it round with a rail; for the cats smell it at a distance, collect about it in numbers, and, by frequently rubbing, and passing and repassing over it, they soon destroy the plant.

Cats require fifteen or eighteen months before they come to their full growth. In less than a year, they are capable of procreating, and retain this faculty during life, which extends not  
beyond

beyond nine or ten years. They are, however, extremely hardy and vivacious, and are more nervous than other animals which live longer.

Cats eat slowly, and with difficulty: Their teeth are so short and ill-placed, that they can tear, but not grind their food. Hence they always prefer the most tender victuals, as fishes, which they devour either raw or boiled. They drink frequently; their sleep is light; and they often assume the appearance of sleeping, when they are only meditating mischief. They walk softly, and without making any noise. As their hair is always clean and dry, it is easily electrified, and the sparks become visible when it is rubbed across with the hand in the dark. Their eyes also sparkle in the dark like diamonds, and seem to throw out, in the night, the light they imbibe during the day.

The wild cat couples with the domestic kind; and, consequently, they belong to the same species. It is not uncommon to see both males and females quit their houses in the season of love, go to the woods in quest of wild cats, and afterwards return to their former habitations. It is for this reason that some domestic cats so perfectly resemble the wild cat. The only real difference is internal; for the intestines of the domestic cat are commonly much longer than those of the wild cat. The latter, however, is larger and stronger than the domestic kind; his lips are always black; his ears are also stiffer; his

tail

tail larger, and his colours more constant. In this climate there is only one species of wild cat; and it appears from the testimony of travellers, that this kind is found in all climates, without being subject to much variety. They existed in America before its discovery by the Europeans. A hunter brought one of them to Christopher Columbus \*, which was of an ordinary size; of a brownish gray colour, and having a very long and strong tail. They were likewise found in Peru †, though not in a domestic state, and also in Canada ‡, in the country of the Illinois, &c. They have been seen in many places of Africa, as in Guiney ||, and the Gold Coast; at Madagascar §, where the natives keep them in a domestic state; and at the Cape of Good Hope \*\*, where M. Kolbe says there is likewise a wild kind, of a blue colour; but they are not numerous. These blue, or rather slate coloured cats, are also found in Asia. ‘In Persia,’ says Pietro della Valle ††, ‘there is a species of cats which properly belong to the province of Chorazan. Their figure and size are the same with those of the common cat. Their beauty consists in the colour of their hair, which is gray, and uniformly the same over the whole body, except that it is darker on the back’ and

\* Vie de Christ. Columb. part. 2. p. 167.

† Hist. des

Incas, tom. 2. p. 121.

‡ Hist. de Nouvelle France, par

Charlevoix, tom. 3. p. 407.

|| Prevot, tom. 4. p. 230.

§ Relation de François Cauche, p. 225.

\*\* Descript. du

Cap. par Kolbe, p. 49.

†† Voyage, tom. 5. p. 98,

‘ and head, and clearer on the breast and belly,  
‘ where it approaches to whiteness, with that  
‘ agreeable mixture of clare-obscure, to use the  
‘ language of painters, which has always a  
‘ wonderful effect. Besides, their hair is fine,  
‘ shining, soft as silk, and so long, that, though  
‘ not frizled, it forms ringlets in some parts,  
‘ and particularly under the throat. These cats  
‘ are among other cats, what the water-dog is  
‘ among other dogs. The most beautiful part  
‘ of the body is the tail, which is very long, and  
‘ covered with hair five or six inches in length.  
‘ They extend and turn it upon their backs, like  
‘ the squirrel, the point resembling a plume of  
‘ feathers. They are very tame ; and the Por-  
‘ tuguese have brought them from Persia into  
‘ India.’ The same author adds, that he had  
four couple of these cats, which he intended  
to bring to Italy. From this description it ap-  
pears, that the Persian cats resemble, in colour,  
those we call Chartreux cats, and that, except  
in colour, they have a perfect resemblance to  
the cat of Angora. It is probable, therefore,  
that the cat of Chorazan in Persia, the cat of  
Angora in Syria, and the Chartreux cat, consti-  
tute but one race, whose beauty proceeds from the  
particular influence of the climate, as the Spanish  
cats, which are red, black, and white, owe their  
beauty to the climate of Spain. It may be re-  
marked in general, that, of all climates on the  
habitable parts of the globe, those of Spain and  
Syria



Syria are most favourable to the production of beautiful varieties in natural objects. In Spain and Syria, the sheep, the goats, the dogs, the cats, the rabbits, &c. have the finest wool, the most beautiful and longest hair, and the most agreeable and variegated colours. These climates, it should appear, soften Nature, and embellish the form of all animals.

The wild cat, like most other animals in a savage state, has coarse colours, and hard hair. But, when rendered domestic, the hair softens, the colours vary; and, in the favourable climates of Chorazan and Syria, the hair grows long, fine, and bushy; all the colours become more delicate; the black and red change into a shining brown, and the grayish brown is converted into an ash-coloured gray. By comparing the wild cat with the Chartreux cat, it will be found, that they differ only in this degradation in the shades of colour. As these animals have always more or less whiteness on their sides and belly, it is apparent, that, to produce cats entirely white and with long hair, like the cats of Angora, nothing farther is requisite, than to join those who have the greatest quantity of white, as has been done to procure white rabbits, dogs, goats, stags, &c. In the Spanish cat, which is only another variety of the wild kind, the colours, instead of being weakened by uniform shades, as in the cat of Syria, are exalted, and have become more lively and brilliant; the yellow is changed



changed into red, the brown into black, and the gray into white. These cats, though transported into America, have not degenerated, but preserve their beautiful colours. ‘In the Antilles,’ says Father Tertre, ‘there are a number of cats, which have probably been brought from Spain. They are mostly marked with red, white, and black. Several of our countrymen, after eating the flesh, carry the skins of these cats into France. When we first arrived at Guadaloupe, the cats were so accustomed to feed on partridges, pigeons, thrushes, and other small birds, that they disdained the rats; but, when the game was much diminished, they attacked the rats with great fury \*,’ &c. In general, cats are not subject, like dogs, to degeneration, when transported into warm climates. ‘The European cats,’ Bosman remarks, ‘when carried to Guiney, change not, like the dogs, but preserve their original figure †,’ &c. Their nature is indeed more constant; and, as their domestic state is neither so complete, so universal, nor, perhaps, so ancient as that of the dog, it is not surprising that they are also less variegated. Our domestic cats, though they differ in colour, form no distinct races. The climates of Spain and Syria have alone produced permanent varieties: To these may be added the climate of Pe-chi-ly in China, where the cats have long hair

\* Hist. gen. des Antilles, par le P. du Tertre, tom. 2. p. 306.    † Voyage de Guinée, par Bosman, p. 2403.

hair and pendulous ears, and are the favourites of the ladies \*. These domestic cats with pendulous ears, of which we have full descriptions, are still farther removed from the wild and primitive race, than those whose ears are erect.

We shall here terminate the history of the cat, and at the same time that of domestic animals. The horse, the ass, the ox, the sheep, the goat, the hog, the dog, and the cat, are our only domestic animals. We add not to this list the camel, elephant, rein-deer, &c. which, though domestic in other countries, are strangers to us ; and we shall not treat of foreign animals, till we have given the history of the wild animals which are natives of our own climate. Besides, as the cat may be considered as only half-domestic, he forms the shade between domestic and wild animals ; for we ought not to rank among domestics those troublesome neighbours, mice, rats, and moles, which, though they inhabit our houses and gardens, are perfectly wild and free. Instead of being attached or submissive to man, they fly from him, and preserve entire, in their obscure retreats, their manners, their habits, and their liberty.

We have seen, in the history of each domestic animal, the great influence which education, shelter, and the careful hand of man, have upon the manners, dispositions, and even the form of animals.

\* Hist. gen. des voyages, par M. l'Abbé Prevot, tom. 6.

animals. We have seen, that these causes, joined to the effects of climate, modify and change the species to such a degree, as to make them very different from what they are in a natural state, and, at the same time, introduce such changes among individuals of the same species, that they would be regarded as different animals, if they preserved not the faculty of intermixing and producing fertile individuals, which is the only essential characteristic of species. We have seen, that the different races of domestic animals observe, in different climates, nearly the same order as the races of the human kind; that, like men, they are stronger, larger, and more courageous in cold countries, milder and more civilized in temperate climates, and weaker and more deformed in very warm regions; and that, in temperate climates, and among polished people, the varieties of each species are most numerous and diversified, and exhibit the most evident marks of the antiquity of their slavery: Pendulous ears, variegated colours, fine long hair, are effects produced by their long continuance in a domestic state. Most wild animals have erect ears. The ears of the wild boar are erect and stiff; but those of the domestic hog are inclined and half-pendulous. Among the Laplanders, the savages of America, the Hottentots, the Negroes, and other unpolished people, all the dogs have erect ears; but they are generally soft and pendulous in Spain, France, Britain,

Britain, Turkey, Persia, China, and other civilized nations. The ears of the domestic cat are not so stiff and erect as those of the wild kind; and in China, a nation which has been very long in a state of civilization, and whose climate is mild, there are cats with pendulous ears. It is for this reason, that the goat of Angora, whose ears are pendulous, should be regarded as a variety farthest removed from the natural state. The strong and marked influence of the climate of Syria, joined to the domestic condition of these animals among a people very anciently civilized, would, in the progress of time, produce this variety, which cannot be preserved in any other climate. In the goats of Angora, brought forth in France, the ears are neither so long nor so pendulous as in those of Syria, and would probably, after a certain number of generations, resume the ears and coarse hair of our common goat.

## S U P P L E M E N T.

By mistaking some of my expressions in the above history of the cat, I find it has been imagined that I had denied him altogether the power of sleeping. I always knew that cats slept, but not so profoundly as I now find they sometimes do. On this subject M. Pafumot, of the  
academy



academy of Dijon, an able naturalist, communicated to me a letter, of which the following is an extract.

‘ Permit me, Sir, to remark, that, in your work, you seem to deny the cat the power of sleeping. I assure you, that, though he sleeps seldom, his sleep is so profound, that it is a species of lethargy, which I have observed at least ten times in different cats. When young, a favourite cat lay every night in bed at my feet. One night, I pushed him from me ; but I was surprised to find him so heavy, and at the same time so immoveable, that I believed him to be dead. I pulled him smartly with my hand ; but I felt no motion. I then tossed him about, and, by the force of the agitation, he began slowly to awake. This profound sleep, and difficulty of wakening, I have frequently observed. It generally happened in the night, having only once observed it in the day ; and this was after perusing what you have said concerning the sleep of these animals. I know another gentleman who has likewise often seen cats sleeping in this profound manner. He tells me, that, when cats sleep during the day, it is always at the time of the greatest heat, and particularly before the approach of stormy weather.’

M. de Lestree, a merchant of Chalons in Champagne, who is accustomed to allow cats to lie in his bed, remarks :

1. ‘ That



1. ' That, when these animals purr, when  
' they are tranquil, and appear to be sleeping,  
' they sometimes make a long inspiration, which  
' is followed by a strong expiration ; and that,  
' at this period, their breath has an odour which  
' greatly resembles that of musk.

2. ' That, when surpris'd by a dog, or any  
' other object which suddenly alarms them, they  
' make a kind of hissing noise, which is accom-  
' panied with the same odour. This is not pe-  
' culiar to the males ; for I have remarked the  
' same thing of both sexes, and of cats of all  
' ages and colours.'

From these facts, M. de Lestree seems to think, that, in the breast or stomach of the cat, there are some vessels filled with an aromatic substance, the perfume of which issues from the mouth. But we discover nothing of this kind from anatomy.

I formerly remarked, that, in China, there were cats with pendulous ears. This variety is not found any where else, and perhaps it is an animal of a different species ; for travellers, when mentioning an animal called *Sumxu*, which is entirely domestic, say, that they can compare it to nothing but the cat, with which it has a great resemblance. Its colour is black or yellow, and its hair very bright and glittering. The Chinese put silver collars about the necks of these animals, and render them extremely familiar. As they are not common, they give a high price,  
both



Plate XLVIII



*A Bell sculp*

WILD CAT

Plate XLIX.



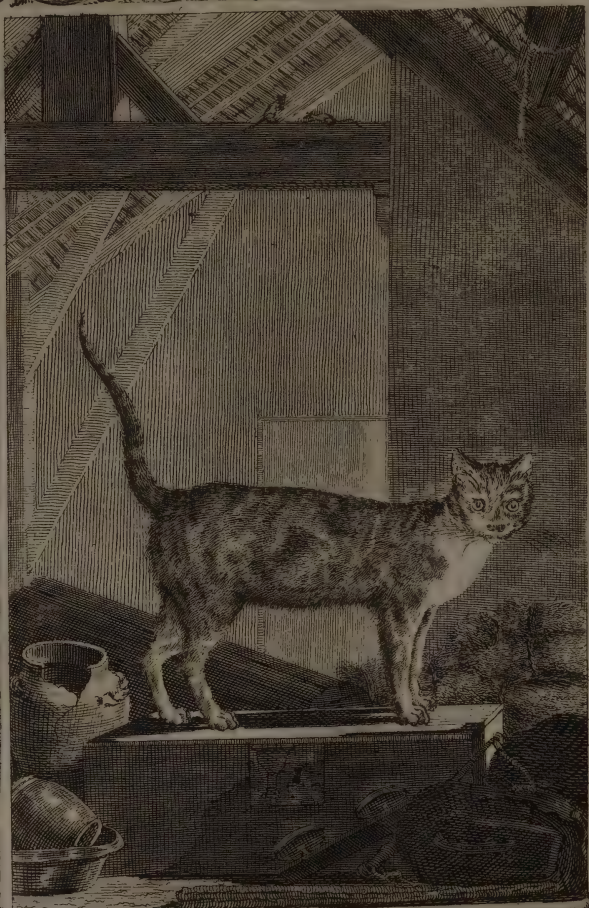
*A Bell Sculp<sup>t</sup>*

DOMESTIC CAT









SPANISH CAT

*A. Bell Sculp.<sup>t</sup>*

Plate LI.



(CHARTREUX CAT)

*Albert Sculp.*



11.1.10



Plate LIII.



*A Bell Sculpt.*

CAT of ANGORA

both on account of their beauty, and because they destroy rats \*.

At Madagascar there are also wild cats rendered domestic. Most of them have twisted tails; and they are called *Saca* by the natives. But these wild cats are of the same species with the domestic kind; for they intermix and produce †.

Another variety has been observed. In our own climate, cats are sometimes produced with pencils of hair at the points of their ears. M. de Seve writes me, (Nov. 16. 1773), that a young cat was brought forth in his house at Paris, of the same race with that we have called the *Spanish cat*, with pencils at the points of its ears, though neither of the parents had any pencils. In a few months the pencils of this cat were as large, in proportion to its size, as those of the Canadian lynx.

The skin of an animal, which greatly resembles that of our wild cat, has been lately sent me from Cayenne. It is called *Haïra* in Guiana, where they eat its flesh, which is white and good; and hence we may presume, that, however similar to the cat, it belongs to a different species. But, perhaps, the name *haïra* is improperly applied; for it is probably the same with *taïra*, which is not a cat, but a small martin, taken notice of in the last volume of this work.

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E

OF

\* Journal des Sçavans, tom. 1. p. 261.

† Voy. de Flacourt, p. 152.

## OF WILD ANIMALS.

**I**N the history of man, and of domestic animals, we have seen Nature under restraint, seldom perfect, often changed and deformed, and perpetually encompassed with fetters, or loaded with foreign ornaments. She is now to appear naked, and adorned with simplicity alone; but her attractions will be heightened by native beauty, by the freedom of her demeanour, the sprightliness of her movements, and other marks of true dignity and independence. We are to see her traversing the surface of the earth, like a sovereign, dividing her empire among the animals, assigning to each his proper element, climate, and subsistence. We shall survey her in the forests, in the waters, and in the plains, dictating her simple but immutable laws, impressing upon every species indelible characters, dispensing her bounty with equity, compensating evil with good, giving to some strength and courage, accompanied with hunger and voracity; to others gentleness, temperance, and agility, attended with restlessness and timidity; and to all, liberty, uniform manners, and ardour in love, which is always easily gratified, and always followed with a happy fecundity.

Love

Love and liberty are the most inestimable gifts which Nature has to bestow. Do these animals we call *wild*, because they are not subject to our caprice, require more to render them completely happy? But they also enjoy a perfect equality; they are neither the slaves nor the tyrants of each other. The individual has no occasion, like man, to dread the rest of his species. They have peace among themselves, and war never approaches them, but from strangers, or from man. They have, therefore, great reason to fly from the human race, to conceal themselves from our observation, to take up their abode in solitudes remote from the habitations of men, to provide for their safety by all the resources afforded them by instinct, and to withdraw themselves from the power of man, using, in every manner, that liberty bestowed on them by Nature, at the same time that she has given them the desire of independence.

Some animals, and they are the most gentle, innocent, and tranquil, content themselves with retiring, and passing their lives in our fields. Those which are more fierce and suspicious, hide themselves in the deepest recesses of the forest. Others, as if they knew there was no safety on the surface of the earth, dig subterraneous abodes, take refuge in caverns, or gain the summits of the most inaccessible mountains. Lastly, the most ferocious and formidable kinds, inhabit deserts only, and reign as monarchs in those

E 2

burning



burning climates, where man, equally savage as themselves, is unable to conquer them.

As all beings, however free, are subjected to physical laws ; and, as the brute animals, as well as man, feel the influences of the heavens and the earth, it appears, that the same causes which have softened and civilized the human species in our climates, have produced similar effects upon every other species. The wolf, which is perhaps the most ferocious animal in the Temperate Zone, is not nearly so terrible or so cruel as the tiger, the panther, and the lion of the Torrid Zone, or the white bear, the lynx, and the hyaena of the Frozen Zone. This difference, as if Nature, to give more harmony to her productions, had adapted the climate to the species, or the species to the climate, is not only general, but, in each particular species, the climate is formed for the manners, and the manners for the climate.

In America, where the heat, under the same latitudes, is less, and the air and earth softer than in Africa, the tiger, the lion, the panther, have nothing formidable in them but the name. They are no longer those tyrants of the forest, those bold and intrepid enemies of man, those rapacious monsters which perpetually thirst for blood and carnage. These animals, in America, generally fly from man, and attack not other wild beasts with open force, but lie in wait to surprise them: They may even be subdued, and almost tamed.

Hence,



Hence, if ferociousness and cruelty were natural to them, they must have degenerated, or rather felt the influence of climate. Under a mild climate, their nature has been softened; every excess of temper has been moderated; and these changes have only rendered them more conformable to the quality of the country they inhabit.

The vegetables which cover the earth, and are more closely connected with it than the animal that feeds upon them, participate also more of the nature of the climate. Every country, every degree of temperature, has its peculiar plants. At the foot of the Alps, we find the vegetables of France and Italy, and, on their summit, those of the northern regions; We even meet with the same plants on the frozen ridges of the African mountains. On the south side of the mountains which divide the Mogul empire from the kingdom of Cashmire, we see all the Indian plants, and we are surprised to find, on the opposite side, nothing but the European kinds. Intemperate climates likewise produce drugs, perfumes, poisons, and all vegetables whose juices are highly exalted. The productions of temperate climates, on the contrary, are always mild: The softest and most wholesome herbs, the sweetest fruits, the gentlest animals, and the most polished men, are peculiar to those happy climates. Thus, the earth produces plants, the earth and plants make animals, and the earth, plants, and

animals, give birth to man; for the qualities of vegetables proceed immediately from the earth and the air; the temperature and other relative qualities of herbivorous animals are derived from the plants upon which they feed; and the physical qualities of man, and other creatures which are nourished partly by flesh and partly by plants, depend, though more remotely, on the same causes, whose influence extends even to dispositions and manners. Figure and size, which appear to be absolute and determined qualities, depend, however, like the relative qualities, upon the influence of climate, and concur in proving that every thing is moderate in temperate regions. The size of our largest quadrupeds have no proportion to that of the elephant, the rhinoceros, or hippopotamus. Our largest birds are small, when compared with the ostrich, the condor, or the cassowary; and what comparison is there between the fishes, the lizards, and the serpents of our climates, with the whale, the walrus, and manati, which people the northern seas, or the crocodiles, the large lizards, and the enormous serpents which infest the land and waters of the south? And, if we examine each species in different climates, we shall find sensible varieties both in size and figure\*. These changes are produced in a slow and imperceptible manner. Time is the great workman of Nature. He moves with regular and uniform steps. He performs

\* See the history of the horse, vol. III. p. 306.; goat, vol. III. p. 406.; hog, vol. III. p. 500.; and dog, vol. IV. p. 1,

performs no operation suddenly; but, by degrees, or successive impressions, nothing can resist his power; and those changes which at first are imperceptible, become gradually sensible, and at last are marked by results too conspicuous to be misapprehended.

Wild and free animals, without excepting man, are, of all animated beings, least subject to changes or variations of any kind. As they are at absolute liberty in the choice of their food and their climate, their nature is more permanent than that of domestic animals, which are enslaved, transported, maltreated, and fed, without consulting their inclination or taste. Wild animals live perpetually in the same manner. They never wander from climate to climate. The wood where they are brought forth is a country to which they are faithfully attached, and they never depart from it, unless they perceive that they can no longer live there in safety. They fly not so much from their natural enemies, as from the presence of man. Nature has furnished them with resources against the other animals, and put them on a level; they know their strength, their address, their designs, their haunts, and, if unable to avoid them, oppose force to force: In a word, they are species of the same genus. But how can they defend themselves against a being who is able to seize without seeing, and kill without approaching them?

*It is not in the power of man to destroy them.*

It is man, therefore, who disturbs and disperses wild animals, and renders them a thousand times more savage than they would naturally be ; for most of them require tranquillity only, and a moderate use of the air and earth. Nature even teaches them to live together, to unite into families, and to form societies. In countries not totally engrossed by man, some vestiges of these societies still remain. We there perceive common works carried on, designs that, though not founded on reason, appear to be projected upon rational conventions, the execution of which supposes union at least, and a joint co-operation of labour. It is not by force or physical necessity, like the ants, the bees, &c. that the beavers labour and build houses ; for they are neither constrained by space, nor time, nor number, but unite from choice. Those which agree, dwell together ; and those which do not agree, remove ; and some of them have been remarked, which, being constantly repulsed by others, were obliged to betake themselves to a solitary life. It is only in distant and desert countries, where they dread not the approach of man, that they incline to render their dwellings more fixed and commodious, by constructing houses, or a kind of villages, which have no small resemblance to the feeble and primitive efforts of a nascent republic. In countries, on the contrary, spread over by men, they carry terror along with them. The society of animals is then at an end. All industry ceases, and eve-

ry art is stifled. They think no more of building, and neglect every conveniency. Perpetually pressed by fear and necessity, their only desire is the bare preservation of life, and their only occupation is flight and concealment. If the human species, as is reasonable to suppose, shall, in the progress of time, people equally the whole surface of the earth, the history of the beaver, in a few ages, will be regarded as a ridiculous fable.

We may, therefore, conclude, that the talents and faculties of animals, instead of augmenting, are perpetually diminishing. Time fights against them. The more the human species multiplies and improves, the more will the wild animals feel the effects of a terrible and absolute tyrant, who, hardly allowing them an individual existence, deprives them of liberty, of every associating principle, and destroys the very rudiments of their intelligence. What advances they have made, or may still make, convey little information of what they have been, or might acquire. If the human species were annihilated, to which of the animals would the sceptre of the earth belong?

The



## The STAG, or RED DEER \*.

**T**HE stag is one of those innocent, gentle, and peaceable animals, which seem to be destined to embellish and animate the solitudes of the forest, and to occupy, at a distance from man, the tranquil retreats of those gardens of Nature. The elegance and lightness of his figure,

\* The deer kind have upright, solid, branched horns, which annually fall off; eight cutting teeth in the lower jaw, and none in the upper. The STAG has long, upright, rounded, and much branched horns: The brow antlers are slender and sharp. The colour of the stag is generally a reddish brown, with some black about the face, and a black list runs down the hind part of the neck and between the shoulders. It grows to a large size; one killed in the county of Aberdeen weighed 18 stone Scottish weight, or 314 lb. The horns of the American stag sometimes weigh 30 lb. and are about four feet high. *Pennant's Synops. of quad.* p. 49.

The name of the stag in Greek is *ελαφος*, in Latin *Cervus*, in Italian *Cervo*; in Spanish *Ciervo*; in Portuguese *Veados*; in German *Hirsch*; in Danish *Hiort*; in Swedish *Kron-hiort*; in Dutch *Hért*; in Polish *Jelienii*.

*Cervus*, Gesner. *Icon. animal. quad.* p. 43. 44. *Aldrov. quad. bifule.* p. 771. 774. *Johnst. hist. nat.* p. 58. tab. 35. fig. 1. *Charle-ton de differ. animal.* p. 8. *Ray, Synops. quad.* p. 84. *Plinii lib.* 8.

CHARACT. GEN. *Cervus*, cornua solida, tenera, corio hirsuto testâ, apiceque crescentia, denudata, annua. Dentes primorés inferiores VIII. Laniarii nulli (interdum solitarii superius). CHAR. SPEC. *Cervus*, elaphus, cornibus ramosis, teretibus, recurvatis. *Linn. Syst. nat.* p. 93.

*Cervus nobilis*, ramis teretibus, omnibus notus; *Klein. quad. hist. nat.* p. 23.

figure, the commodiousness of his stature, the flexibility and springiness of his limbs, his grandeur, strength, and swiftness, and his head, which is rather adorned than armed with living branches, that, like the leaves of trees, are annually renewed, sufficiently distinguish him from the other inhabitants of the wood. As he is also the noblest of these animals, he ministers to the pleasure, and has occupied the leisure, of the greatest heroes. The exercise of the chase should always succeed, or rather precede, the fatigues of war. To know the management of horses and arms, are talents common to the warrior and the hunter. To be accustomed to fatigue, address, dexterity, and quickness of movement, so necessary for the support of courage, are qualities acquired in the chase, and extremely useful in battle. Hunting is a most delightful school of a necessary art. It is the only amusement which entirely divests us of care, the only recreation that is not accompanied with effeminacy, and gives vivacity and pleasure, without languor or disgust.

How can men, who, from their situation in life, are perpetually harrassed with company, be better employed than in hunting? Always surrounded with a multitude, teased with the importunity of their demands, obliged to give their attention to affairs which are foreign to them, agitated by the sollicitations of men of high rank, and constrained and fettered in proportion to  
their

their elevation, great men would feel only the weight of their own grandeur, and exist only for others, if they did not occasionally abstract themselves from a croud of parasites and flatterers. To preserve self-enjoyment, to recal personal attachments, and receive private friendship, sentiments a thousand times more precious and interesting than all the ideas of grandeur, retirement from the tumult and business of the world is sometimes necessary ; and what retirement can be more various and animated than the chase ? what exercise more useful to the body ? what amusement more agreeable to the mind ?

Perpetual action, or intercourse with man, is equally painful as perpetual thinking. Nature never intended man for the contemplation of abstract subjects. To be occupied, without relaxation, in difficult studies, to lead a sedentary life, and to make the closet the centre of our existence, is equally unnatural as to pass our days in tumult and agitation, continually drawn along by the movements of other men, and obliged to keep a jealous and constrained watch over our own conduct, looks, and gestures. Whatever ideas we may conceive of the dignity of human nature, it is apparent, that public exhibition is not existence, and that we are less fitted for thinking than for action, for reasoning than enjoyment. True pleasure consists in the unrestrained use of ourselves. Our best gifts are those we receive from Nature. She presents us  
with

with the useful and inexhaustible enjoyments which arise from the air, the earth, the fields, and the forests. Hence a taste for hunting, fishing, gardening, and agriculture, is natural to all men: And, in societies less complicated than ours, there are only two ranks, both of them connected with this mode of life; the Nobles, whose business is arms and hunting; and the Vulgar, who are occupied in cultivating the earth.

In polished societies, where every thing is improved and brought nearer perfection, to render hunting more delightful and sprightly, to ennoble this most beneficial and respectable of all exercises, it has been formed into an art. The chase of the stag requires a species of knowledge, which can only be learned by experience: It implies a royal assemblage of men, horses, and dogs, all so trained, practised, and disciplined, that their movements, their researches, and their skill, must concur in producing one common end. The huntsman should know the age and the sex of the animal; he should be able to distinguish with precision, whether the stag he has *harboured* \* with his hound be a *knobber* †, a young stag ‡, in his sixth or seventh year, or  
an

\* *To harbour* a stag, is to go round the place in which he has taken refuge, and to learn whether he has not escaped.

† *Knobber* is a stag after he passes his first year till he arrives at the third.

‡ In the third, fourth, or fifth year of his age.

an old stag \*. The chief marks which convey this intelligence is derived from the *foot* †, and the excrement. The *foot* of the stag is better formed than that of the hind, or female. Her *leg* ‡ is more gross and nearer the heel. The impressions of his feet are rounder, and farther removed from each other. He moves more regularly, and brings the hind foot into the impression made by the fore foot. But the distance between the steps of the hind are shorter, and her hind feet strike not so regularly the track of the fore feet. As soon as the stag acquires his fourth horns, he is easily distinguished; but, to know the *foot* of a young stag from that of a hind, requires repeated experience. Stags of six, seven, &c. years, are still more easily known; for their fore foot is much larger than the hind foot; the older they are, the sides of their feet are the more worn §; the distance of their steps are more regular than those of young stags; they always place their hind foot exactly in the track of the fore foot, except, when they shed their horns, the old  
stags

\* A stag is said to be *old* from eight years and upwards.

† *Foot* is used for the impression made on the ground by the foot.

‡ In the language of hunters, *leg* means the two bones behind the foot, which make an impression on the ground along with the foot.

§ This mark is equivocal; for the wearing of the hoof depends much on the plainness or roughness of the country which the animals frequent.



flags *mifplace* \*, at this feafon, nearly as often as the young ones ; but in this they are more regular than the hind or young flag, placing the hind foot always at the fide of the fore foot, and never beyond or within it.

When the huntsman, from the drinefs of the feafon, or other circumftances, cannot judge by the foot, he is obliged to trace the animal backwards, and endeavour to find his dung. This mark requires, perhaps, greater experience than the knowledge of the foot ; but, without it, the huntsman would be unable to give a proper report to the company. After the report of the huntsman, and the dogs are led to the refuge of the flag, he ought to encourage his hound, and make him reft upon the track of the flag till the animal be unharboured. Instantly the alarm is given to uncouple the dogs, which ought to be enlivened by the voice and the horn of the huntsman. He fhould alfo diligently obferve the foot of the flag, in order to difcover whether the animal has ftarted, and fubftituted another in his place. But it is then the bufinefs of the hunters to feparate alfo, and to recall the dogs which have gone aftray after falfe game. The huntsman fhould always accompany his dogs, and encourage, without preffing them too hard. He fhould affift them in detecting all the arts of efcape ufed by the flag ; for this animal has remarkable  
addrefs

\* *To mifplace*, is to put the hind foot out of the track of the fore foot.

address in deceiving the dogs. With this view, he often returns twice or thrice upon his former steps ; he endeavours to raise hinds or younger stags to accompany him, and draw off the dogs from the object of their pursuit : He then flies with redoubled speed, or springs off at a side, lies down on his belly, and conceals himself. In this case, when the dogs have lost his foot, the huntsmen, by going backwards and forwards, assist them in recovering it. But, if they cannot find it, they suppose that he is resting within the circuit they have made, and go in quest of him. But, if they are still unable to discover him, there is no other method left, but, from viewing the country, to conjecture where he may have taken refuge, and repair to the place. As soon as they have recovered his foot, and put the dogs upon the track, they pursue with more advantage, because they perceive that the stag is fatigued. Their ardour augments in proportion to his feebleness ; and their scent becomes more distinct as the animal grows warm. Hence they redouble their cries and their speed ; and, though the stag practises still more arts of escape than formerly, as his swiftness is diminished, his arts and doublings become gradually less effectual. He has now no other resource but to fly from the earth which he treads, and get into the waters, in order to cut off the scent from the dogs. The huntsmen go round these waters, and again put the dogs on the track of his foot. The stag, after

ter taking to the water, it is incapable of running far, and is soon *at bay* \*. But he still attempts to defend his life, and often wounds the dogs, and even the huntsmen when too forward, by blows with his horns, till one of them cuts his hams to make him fall, and then puts an end to his life by a blow of a hanger. They now celebrate the death of the stag by a flourish of their horns; the dogs are allowed to trample upon him, and at last partake richly of the victory by devouring his flesh.

Every season is not equally proper for hunting the stag with hounds. In spring, when the leaves begin to unfold and to adorn the forests, when the earth is covered with fresh herbage and flowers, their perfumes diminish the sensation of the dogs; and, as the stag is then in his greatest vigour, it is extremely difficult for them to come up with him. It is likewise a settled point among hunters, that, when the hinds are about to bring forth, the chase is most difficult, and that, at this period, the dogs often quit a fatigued stag, and pursue any hind which bounds before them. In the same manner, in the beginning of autumn, when the rutting season commences, the hounds hunt without ardour: The strong odour of love renders, perhaps, the scent more uninteresting; and, perhaps, at this season, the odour of all stags is nearly the same. During the winter

VOL. IV. F                      snows,

\* When a stag is worn out with fatigue, he turns upon the hounds, and is then said to be at bay.

snows, it is also improper to hunt the stag ; because the hounds have no acuteness of scent, and seem to pursue the foot rather by the eye than the nose. As, in this season, the stags find not sufficient nourishment in their retreats, they issue forth into the more open parts of the country, and even into the sown fields. They assemble in flocks in the month of December, and, when the frosts are severe, they seek shelter on the sea-coasts, or in covered places, where they lock themselves fast together, and acquire warmth by mutual respiration. When the rigours of winter decline, they frequent the borders of the forest, and make depredations on the rising wheat. In spring, they shed their horns, which fall off spontaneously, or by rubbing them gently against the branches of trees. It is seldom that both horns fall off at the same time, the one generally preceding the other a day or two. The old stags cast their horns first, which happens about the end of February or beginning of March. An aged stag, or one in his seventh year or upwards, does not cast his horns before the middle of March ; a stag of six years sheds his horns in April ; young stags, or those from three to five years old, shed their horns in the beginning, and those which are in their second year, not till the middle or end of May. But, in all this there is much variety ; for old stags sometimes cast their horns sooner than those which are younger. Besides, the shedding of the horns is ad-  
vanced

vanced by a mild, and retarded by a severe and long winter.

As soon as the stags cast their horns, they separate from each other, the young ones only keeping together. They no longer haunt the deepest recesses of the forest, but advance into the cultivated country, and remain among brushwood during the summer, till their horns are renewed. In this season, they walk with their heads low to prevent their horns from rubbing against the branches; for they continue to have sensibility till they acquire their full growth. The horns of the oldest stags are not half completed in the middle of May, and acquire their full length and hardness before the end of July. Those of the younger stags are proportionally later both in shedding and being renewed. But, as soon as they have acquired their full dimensions and solidity, the stags rub them against the trees, in order to clear them of a skin with which they are covered: And, as they continue this friction for several days successively, it is said \*, that the horns retain the colour peculiar to the juices of the trees against which they have been rubbed; that they become red when rubbed against beeches and birches, brown against oaks, and black against elms and trembling poplars. It is likewise said, that the horns of young stags, which are smoother, take not so deep a tincture from the trees as those of

F 2

old

\* Le nouveau traité de la vénerie, p. 27.



old stags, which are rougher, and closer covered with little prominences; because it is these prominences which retain the coloured juices of the trees. But I cannot believe that this is the true cause; for I have kept tamed stags in an inclosure where there was not a single tree, and yet their horns were coloured in the same manner as in those which inhabit the forests.

Soon after the stags have polished their horns, they begin to feel the impressions of love. Towards the end of August or beginning of September, they leave the coppice, return to the forests, and search for the hinds. They cry with a loud voice; their neck and throat swell, they become perfectly restless, and traverse, in open day, the fields and the fallow grounds; they strike their horns against trees and hedges; in a word, they seem to be transported with fury, and run from country to country till they find the hinds or females, whom they pursue and compel into compliance; for the female at first avoids and flies from the male, and never submits to his embraces till she be fatigued with the pursuit. The old hinds likewise come in season before the younger ones. When two stags approach the same hind, they must fight before they enjoy. If nearly equal in strength, they threaten, paw the ground, set up terrible cries, and attack each other with such fury, that they often inflict mortal wounds with the strokes of their horns. The combat never terminates but in the defeat or flight

flight of one of the rivals. The conqueror loses not a moment in enjoying his victory, unless another rival approaches, whom he is again obliged to attack and repel. The oldest stags are always masters of the field; because they are stronger and more furious than the young ones, who must wait patiently till their superiors tire, and quit their mistresses. Sometimes, however, the young stags accomplish their purposes when the old ones are fighting, and, after a hasty gratification, fly off. The hinds prefer the old stags, not because they are most courageous, but because they are much more ardent. They are likewise more inconstant, having often several females at a time; and, when a stag has but one hind, his attachment to her does not continue above a few days: He then leaves her, goes in quest of another, with whom he remains a still shorter time; and, in this manner, passes from one to another, till he is perfectly exhausted.

This ardour of love lasts only three weeks, during which the stags take very little food, and neither sleep nor rest. Night and day, they are either walking, running, fighting, or enjoying the hinds. Hence, at the end of the rutting season, they are so meagre and exhausted, that they recover not their strength for a considerable time. They generally retire to the borders of the forests, feed upon the cultivated fields, where they find plenty of nourishment, and remain there till their strength is re-established. The

rutting season of old stags commences about the beginning, and ends about the 20th day of September. In those of six or seven years old, it begins about the tenth of September, and concludes in the beginning of October. In young stags, or those in their third, fourth, or fifth year, it begins about the 20th of September, and terminates about the 15th of October; and, at the end of October, the rutting is all over, except among the *prickets*, or those which have entered into their second year; because they, like the young hinds, are latest of coming into season. Hence, at the beginning of November, the season of love is entirely finished; and the stags, during this period of weakness and lassitude, are easily hunted down. In seasons when acorns and other nuts are plentiful, the stags soon recover their strength, and a second rutting frequently happens at the end of October; but it is of much shorter duration than the first.

In climates warmer than that of France, the rutting time, like the seasons, is more forward. Aristotle informs us\*, that, in Greece, it commences in the beginning of August, and terminates about the end of September. The hinds go with young eight months and some days, and seldom produce more than one fawn. They bring forth in May or the beginning of June, and so anxiously conceal their fawns, that they often expose themselves to be chased, with a  
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\* Aristot. Hist. animal. lib. 6. c. 29.

view to draw off the dogs, and afterwards return to take care of their young. All hinds are not fertile; for some of them never conceive. These barren hinds are grosser and fatter than those which are prolific, and also come soonest in season. Some hinds are said to have horns like the stag, which is not altogether improbable. The young are not called *fawns* or *calves* after the sixth month: The knobs of their horns then begin to appear, and they take the name of *knobbers* till their horns lengthen into *spears*, and then they are called *brocks* or *staggards*. During the first season, they never leave their mothers. In winter, the stags and hinds, of all ages, keep together in flocks, which are always more numerous in proportion to the rigour of the season. They separate in spring: The hinds retire to bring forth; and, during this period, the flocks consist only of knobbers and young stags. In general, the stags are inclined to associate, and nothing but fear or necessity obliges them to disperse. The stag is capable of generating at the age of eighteen months: Those brought forth during the spring of the preceding year, cover the hinds in autumn; and it is presumable that these embraces are prolific. The following circumstances, however, may render this opinion doubtful: The stags have not then acquired above a half or two thirds of their growth, which is not completed till the eighth year of their age; and their horns continue to increase during

during the same period. But it ought to be remarked, that the fawn soon gathers strength; that, during the first, and even the second year, his growth is very quick; and that he has already a redundance of nourishment, because his horns are considerably long, which is the most certain mark of ability to impregnate. It is allowed that animals, in general, are not capable of procreating till they have nearly acquired their full growth. But those which have fixed seasons for rutting or spawning, seem not to observe this law. Fishes spawn and are prolific before they have attained a fourth, or even an eighth part of their growth; and, among quadrupeds, those which, like the deer-kind, have determined seasons for rutting, procreate earlier than other animals.

There are so many relations between the nutrition, the production of the horns, the rutting, and the generation of these animals, that, to have a clear conception of the particular effects which result from them, it is necessary to give a general recapitulation of what I formerly advanced on the subject of reproduction\*. Generation depends solely on a redundance of nourishment. During the growth of an animal, which is always most rapid in infancy, the nourishment is entirely exhausted in the extension and development of the body. Hence there is no redundancy, consequently no production or secretion

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\* See above, vol. II. chap. 2. 3. 4.



tion of feminal fluid, and, of course, young animals are incapable of procreation. But, when they have obtained the greatest part of their growth, the redundance of nourishment begins to manifest itself by new productions. In man, the beard, the hair, the prominency of the breasts, and the expansion of the organs of generation, appear at the age of puberty. In the brute creation, and particularly in the stag, this redundance produces effects still more remarkable, as the growth of the horns, the swelling of the testicles, the turgidity of the neck and throat, the fat, the rutting, &c. And, as the growth of the stag is at first very rapid, a year only passes before the redundance of nourishment begins to show itself by the production of horns: If brought forth in May, the rudiments of the horns appear in the same month of the following year; and they continue to lengthen and acquire solidity, in proportion to the quantity of nourishment taken by the animal. About the end of August, they are fully grown, and so dense and insensible, that the animal rubs them against the trees, in order to deprive them of the skin or scurf with which they are covered. At the same time, the fat, which is likewise produced by the redundance of nourishment, ceases to accumulate, and begins to be determined towards the organs of generation, and to excite in the stag that ardour of desire which renders him perfectly furious. That the production of horns, and the secretion of semen, depend on the same cause, is evident from

from this fact, that, when the organs necessary for the secretion of semen are destroyed by castration, the production of the horns is likewise prevented; for, if this operation is performed after the horns are shed, they are never renewed; and if, on the contrary, it is done when the horns are perfect, they never fall off. In a word, after castration, the animal remains during life in the same condition it was before that operation. As it feels no longer the ardour of rutting, the concomitant symptoms likewise disappear. There is no longer any accumulation of fat or suet, no more turgidity of the neck and throat, and the disposition of the creature becomes more gentle and tranquil. The parts cut off, therefore, were necessary, not only for collecting the redundant nourishment, but likewise for pushing it to the surface of the body in the form of fat, and particularly to the top of the head, where it gives rise to the horns, and for giving vigour and spirit to the animal. Castrated stags, it is true, become fat; but they produce no horns; their neck and throat never swell; and their fat is never so highly exalted as that of entire stags, which, in the rutting season, have an odour so strong as to be perceived at a great distance; and their flesh is so infected with it, that it is uneatable, offensive to the smell, and putrifies in a very short time; while that of the castrated stag may be preserved fresh, and eat at all seasons. The difference between the horns of stags of the same

same age, of which some are thick, and others thin and slender, which is solely owing to a defect of food, is another proof that the horns are produced by redundant nourishment : For a stag which inhabits a rich country, where he is not disturbed by dogs or men, but is allowed to feed and ruminat in peace, will always have the highest, widest, largest, and most branchy horns. But those which live in situations where they can neither find repose nor a sufficient quantity of food, will have horns with few branches, slender stems and brow-antlers. Thus it is easy to judge, by the horns of the stag, whether he has lived in a rich and peaceable country, or the opposite. Those which are in a bad condition, have been wounded, or much disturbed by hunting, are seldom fat, or have fine horns ; their rutting time is also later ; and their horns are neither so soon shed nor renewed. Hence every circumstance concurs in demonstrating that the horns, like the seminal fluid, are nothing but the redundant and superfluous organic nourishment, which could not be exhausted in expanding and supporting the animal body.

It is, therefore, apparent, that penury of food both retards the growth and diminishes the size of the horns ; and, perhaps, it is not impossible, by retrenching the quantity of food, to suppress entirely this production, without having recourse to castration. It is, however, certain, that castrated stags eat less food than those which are un-mutilated ; and the females of this species, as well

well as those of the fallow-deer, the roe, and the elk have no horns, because they eat less than the males; and because, at the very time that a redundance of nourishment would naturally happen, they are with young, and, instead of showing itself externally, it is first exhausted in nourishing the foetus, and afterwards in nourishing the fawn. The objection, that the female rain-deer, which has horns like the male, rather supports than weakens this argument; for, of all horned animals, the rain-deer, in proportion to his size, has the largest and most voluminous horns, often extending, before and behind, the whole length of the body. He likewise abounds most in fat \*; and, besides, the horns of the female are much smaller than those of the male. This example, therefore, proves no more than that, when the redundance is so great as not to be exhausted by gestation and the growth of the foetus, it breaks through the body, and forms a new production, as in the male, only smaller in size, because the quantity of redundant matter is less.

What I have remarked concerning nourishment ought not to be extended to the mass or volume of the aliments, but only to the quantity of organic particles, that living, active, and prolific matter which unfolds and supports all animated beings. The rest is nothing but dregs, which may be more or less in quantity, without inducing any change upon the body: And, as the

*lichen*

\* La Venerie de du Fouilloux, p. 97.



*lichen rangiferinus*, or rain-deer liverwort, is the ordinary food of the rain-deer, and is more substantial than the leaves, the bark, or the buds of trees, it is not surprising, that this animal should have a greater redundance of organic particles, and, consequently, larger horns, and more fat, than the common stag. It must be acknowledged, however, that the organic matter which produces the horns, is not perfectly disengaged from useless particles, and that it preserves, after passing the body of the animal, marks of its former vegetable state. The horns of the stag shoot, grow, and are disposed like the branches of a tree. Its substance is, perhaps, less osseous than lignous. To use the expression, it is a vegetable grafted upon an animal, participating of the nature of both, and forming one of those shades by which Nature always bounds the extremities of her productions, and which she employs to connect substances that are greatly removed from each other.

In the animal, as formerly remarked \*, both extremities of the bones grow at a time. The fulcrum upon which the extending power is exerted, is in the middle of the bone, which part is always first ossified, and from which the two extremes progressively recede, and continue soft till the bone acquires its full length. In the vegetable, on the contrary, only one extremity of the wood grows. The bud, which unfolds to form a branch,

\* See above, vol. II. art. *Of Old age and Death.*



branch, is attached to the old wood by its inferior extremity, and upon this fulcrum the power of longitudinal extension acts. This remarkable difference between the vegetation of bones and the solid parts of plants, does not take place in the horns of stags. On the contrary, nothing can be more similar to the growth of a tree. The horns extend at one extremity only, the other serving for a fulcrum. They are at first tender as an herb, and then harden like wood. The skin which covers and grows along with them is their bark, and it is rubbed off after they attain their full size. As long as they continue to grow, their extremities are soft; and they likewise divide into several branches. In a word, every circumstance is similar, and corresponds in the developement of both. Hence the organic particles, which constitute the living substance of the stag, still retain the impression of the vegetable; because they arrange themselves in the same order as the parts of plants. Here it is apparent, that matter has an influence upon form. The stag which inhabits the forest, and feeds on the sprigs of trees only, takes so strong an impression from the wood, that he produces a species of tree, which preserves indelible and evident marks of its origin. This effect, though singular, is not solitary, and depends on a general cause, which I have already pointed out.

Both in animals and vegetables, the character, or mould, of each species, is the most constant and

and unalterable thing in Nature : What is most variable and desultory, is the matter of which they are composed. Matter, in general, seems to be indifferent to all forms, and capable of receiving every possible impression. The organic or living particles of this matter pass from vegetables to animals, without destruction or alteration, and form equally the living substance of the herb, of the wood, of the flesh, and of the bones. According to this view, it appears that matter can never have any influence on form, and that no kind of food, provided the animal can extract the organic particles, and assimilate them by nutrition, could induce any change upon the form, or have any other effect than to support and expand the body, by modelling itself upon all the particles of the interior mould, and intimately penetrating them. What proves this point is, that animals which live upon herbage, a substance very different from that of their own bodies, extract from it materials sufficient for the production of flesh and blood, and that they are nourished and grow as well as animals who feed upon flesh alone. However, by examining Nature more minutely, we shall find, that the organic particles sometimes do not perfectly assimilate themselves to the internal mould, and that matter has often a sensible influence upon form. Size, for example, which is one of the attributes of form, varies in every species, according to the difference of climate. The quality and quantity  
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of flesh, two other attributes of form, change according to the difference of food. This organic matter, therefore, which the animal assimilates to its own body by nutrition, is not absolutely indifferent to the reception of every form, nor deprived of the original figure which it possessed. It retains some characters of its primitive state. It acts, therefore, by its proper form upon that of the organized body to which it affords nourishment ; and, though this action is almost imperceptible, and infinitely inferior to the power which obliges the organic particles to assimilate themselves to the internal mould that receives them, yet, in the progress of time, sensible effects must result from it. The stag, who inhabits the forests, and lives solely upon wood, produces and carries about with him a species of trees, which is nothing but the redundant part of his nourishment. The beaver, who lives in the waters, and feeds upon fishes, has a tail covered with scales. The flesh of the otter, and of most water fowls, is a Lent diet, a kind of fishy flesh. We may, therefore, presume, that animals perpetually nourished by the same food, however strong the original impression of Nature, would, in process of time, acquire a tincture from the qualities of this food, and undergo a kind of transformation, by an assimilation contrary to the first. The nourishment would no longer assimilate itself entirely to the form of the animal, but the animal would partly assimilate itself to

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the form of nourishment, as we perceive in the horns of the stag and the tail of the beaver.

In the stag, the horns are an accessory, a part foreign to the animal, and regarded as belonging to him only because it proceeds from his body. But it is really a vegetable production, since it retains the characters of that vegetable from which it derives its origin, and resembles the wood of trees, in the manner of its growth, ramification, solidity, drying, and separation; for, after acquiring its greatest density, it ceases to extract nourishment, it falls spontaneously, like a ripe fruit from the branch. The very name given to this production in our language is an indication that it has been regarded as wood \*, and not as a horn, a bone, a tusk, &c. And, though this theory seems to be sufficiently established by the preceding reasoning, yet I ought not to pass over a fact recorded by the ancients. Aristotle †, Theophrastus ‡, and Pliny ||, tell us, that ivy has been seen growing round the young horns of stags. If this fact be

VOL. IV. G true,

\* The French call the horns of a stag his *wood*.

† Captus jam cervus est, hederam suis enatam cornibus gerens viridem, quae cornu adhuc tenello forte inserta, quasi ligno viridi coaluerit; *Arist. Hist. Animal. l. ix. c. 5.*

‡ Hedera in multis creatur, et quod mirabilius, visa est in cornibus cervi etiam aliquando. Commovit (inquit Jul. Scaliger apud Theophrastum) virum accuratum cervi cornibus haerens hedera; quid enim eo seminium detulit, &c.; *Lib. II. de Caus. Plant. cap. 23.*

|| In mollioribus cervorum cornibus hedera coalescit, dum ex arborum atritu illa experiuntur; *Plin. de admirand. auditionibus.*

true, and it may easily be determined by experiment, an analogy still more intimate will be established between the *wood* of the stag and that of trees.

The horns and tusks of other animals are not only different from the *wood* of the stag; but, in their growth, texture, and form, both external and internal, there is nothing analogous to wood. The nails, the claws, the hairs, the feathers, the scales of animals, grow, it is admitted, by a species of vegetation; but this vegetation differs widely from that of wood. The horns of oxen, goats, antelopes, &c. are hollow within; but the wood of the stag is equally solid through its whole extent. The substance of these horns is the same with that of the nails, claws, and scales: But the horns of the stag resemble wood more than any other substance. The inside of all hollow horns is covered with a kind of *periosteum*, and they contain in their cavity a bone, or core, which supports them; they never shed, but grow during the life of the animal; and its age may be learned by their rings or annual circles. Instead of growing by their superior extremity, like the *wood* of the stag, they grow like nails, feathers, and hairs, by their inferior extremity. In the same manner, the tusks of the elephant, walrus, and wild boar, and all other animals, are hollow within, and grow only by their inferior extremity. Thus horns and tusks



tusks have no more analogy to the *wood* of the stag than nails, hairs, or feathers.

Vegetation may, therefore, be reduced to three kinds. The first, in which the growth proceeds from the superior extremity, as in plants, trees, and the *wood* of the stag; the second, where the growth advances from the inferior extremity, as in horns, nails, claws, hairs, feathers, scales, tusks, teeth, and other external parts of animal bodies; the third, in which the growth proceeds from both extremities at the same time, as in bones, cartilages, muscles, tendons, and other internal parts of animals. The material cause of all these three species, is the redundance of organic nourishment; and the assimilation of this nourishment by the internal mould, which receives it, is the effect. Thus the growth of an animal is always more or less rapid, in proportion to the quantity of this redundant nourishment; and, after the greatest part of growth is acquired, it is determined to the seminal reservoirs, endeavours to escape from the body, and to produce, by means of copulation, new organized beings. The difference between animals, which, like the stag, have fixed seasons, and other animals which can engender at all times, proceeds entirely from their manner of feeding. Man and domestic animals, who have daily an equal quantity of food, and often too much, are perpetually in a capacity for procreation. The stag, on the contrary, and most wild animals, who suffer greatly

in the winter for want of food, have then nothing redundant, and are incapable of generating till they recruit during the summer. It is immediately after this season that the stag begins to rut; and, by the great waste he suffers at this period, he continues during winter in a state of languor and debility. His flesh is then so meagre, and his blood so impoverished, that worms breed under his skin, which still augment his misery, and he does not get quit of them till the spring, when he acquires new life and vigour by the active nourishment furnished to him by the fresh productions of the earth.

Thus the life of the stag is spent in alternate plenty and want, vigour and debility, health and sickness, without having any change introduced into his constitution by these opposite extremes. He lives as long as other animals which are not subject to such vicissitudes. As he grows five or six years, he lives seven times that number, or from 35 to 40 years \*. What has been reported concerning the longevity of the stag merits no credit. It is only a popular prejudice which prevailed in the days of Aristotle, and which that philosopher considered as improbable, because neither the time of gestation, nor of the growth of the young stag, indicated long life †.

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\* *Nouveau traité de la venerie*, p. 141.

† Vita esse perquam longa hoc animal fertur; sed nihil certi ex iis quae narrantur videmus; nec gestatio aut incrementum hinnulli ita evenit quasi vita esset. praelonga; *Arist. Hist. animal. lib. vi. c. 29.*

This authority ought to have abolished the prejudice: But it has been renewed, in the ages of ignorance, by a fabulous account of a stag taken by Charles VI. in the forest of Senlis, with a collar upon which was written this inscription, *Caesar hoc me donavit.* The love of the marvellous inclined men to believe that this animal had lived a thousand years, and had his collar from a Roman Emperor, rather than to suppose that he came from Germany, where all the Emperors take the name of *Caesar*.

The horns of the stag augment annually both in height and thickness, from the second to the eighth year, and continue nearly in equal beauty during all the vigour of life. But, when he grows old, his horns decline. Our stags have seldom more than twenty or twenty-two antlers or palms; and this number, even when at the highest pitch of vigour and perfection, is by no means constant; for it varies every year, according to the quantity of nourishment and repose the animal has enjoyed: The largeness of the horns depends on the same cause; and their quality is also determined by the kind of nourishment they receive. Like the wood of the forest, the *wood* of the stag is large, tender, and light, in moist and fertile countries, and short, hard, and heavy, in dry and barren regions.

The size and stature of the animals themselves likewise differ according to the places they inhabit. The stags which frequent the  
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valleys, or hills abounding in grain, are larger and taller than those which feed upon dry and rocky mountains. The latter are low, thick, and short. Neither are they equally swift; but they run longer than the former: They are also more vicious, and have longer hair on their heads. Their horns are commonly short and black, like a fluted tree, the bark of which is always of a darker colour. But the horns of the stags which feed in the plains are high, and of a clear reddish colour, like the wood and bark of trees which grow in a good soil. These little squat stags never frequent the lofty woods, but keep always among the coppices, where they can more easily elude the pursuit of the dogs. The Corsican appears to be the smallest of these mountain-stags. He exceeds not the half of the height of the ordinary kind, and may be regarded as a terrier among stags. His colour is brown, his body is squat, and his legs are short. And what convinces me, that the size and stature of stags in general depend on the quantity and quality of their food, is, that, having reared one at my house, and fed him very plentifully for four years, he was much taller, thicker, and plumper, at that age, than the oldest stags in my woods, which are, however, of a very good size.

Yellow is the most common colour of the stag. But many of them are brown, and others red.

red. White stags are more rare, and seem to be a race that has become domestic, but very anciently; for both Aristotle and Pliny mention white stags; and they appear then to have been equally uncommon as at present. The colour of the horns, like that of the hair, depends on the age and nature of the animal, and the impression of the air. The horns of young stags are whitish, and less deeply coloured than those of the old. Stags, whose colour is a clear diluted yellow, have often pale ill-coloured horns. Those which are of a lively yellow have generally red horns; and brown stags, especially those which have black hair on the neck, have likewise black horns. The internal substance of the horns, it is true, is almost equally white in all stags; but they differ greatly in solidity and texture. Some of them are very spongy, and even contain pretty large cavities. This difference in texture is sufficient to account for their assuming different colours; and it is unnecessary to have recourse to the juices of trees, since we daily see the whitest ivory turn yellow or brown after being exposed to the air, though its texture be much more compact than that of the stag's horns.

The stag appears to have a fine eye, an acute smell, and an excellent ear. When listening, he raises his head, erects his ears, and hears from a great distance. When he is going into a copse, or other half covered place, he stops to look round him on all sides, and scents the wind,

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to discover if any object is near that might disturb him. He is a simple, and yet a curious and crafty animal. When hissed or called to from a distance, he stops short, and looks steadfastly, and with a kind of admiration, at carriages, cattle, or men; and, if they have neither arms nor dogs, he moves on unconcernedly, and without flying. He appears to listen, with great tranquillity and delight, to the shepherd's pipe; and the hunters sometimes employ this artifice to encourage and deceive him. In general, he is less afraid of men than of dogs, and is never suspicious, or uses any arts of concealment, but in proportion to the disturbances he has received. He eats slow, and has a choice in his aliment; and, after his stomach is full, he lies down, and ruminates at leisure. He seems to ruminate with less facility than the ox. It is only by violent shakes that the stag can make the food rise from his first stomach. This difficulty proceeds from the length and direction of the passage through which the aliment has to go. The neck of the ox is short and straight; but that of the stag is long and arched; and, therefore, greater efforts are necessary to raise the food. These efforts are made by a kind of hiccup, the movement of which is apparent, and continues during the time of rumination. His voice is stronger, and more quivering, in proportion as he advances in years. The voice of the hind is shorter and more feeble. She never bellows

bellows from love, but from fear. The stag, during the rutting season, bellows in a frightful manner: He is then so transported, that nothing disturbs or terrifies him. He is, therefore, easily surpris'd; as he is loaded with fat, he cannot keep long before the dogs. But he is dangerous when at bay, and attacks the dogs with a species of fury. He drinks none in winter, nor in spring, the dews and tender herbage being then sufficient to extinguish his thirst. But, during the parching heats of summer, to obtain drink, he frequents the brooks, the marshes, and the fountains; and, in the season of love, he is so over-heated, that he searches every where for water, not only to satisfy his immoderate thirst, but to bathe and refresh his body. He then swims more easily than at any other time, on account of his fatness. He has been observed crossing very large rivers. It has even been alledged, that, attracted by the odour of the hinds, the stags, in the rutting season, throw themselves into the sea, and pass from one island to another at the distance of several leagues. They leap still more nimbly than they swim; for, when pursued, they easily clear a hedge or a pale fence of six feet high. Their food varies in different seasons. In autumn, after rutting, they search for the buds of green shrubs, the flowers of broom or heath, the leaves of brambles, &c. During the snows of winter, they feed upon the bark, moss, &c. of trees; and, in mild weather,

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they browse in the wheat-fields. In the beginning of spring, they go in quest of the catkins of the trembling poplar, willow, and hazel trees, the flowers and buds of the cornel-tree, &c. In summer, when they have great choice, they prefer rye to all other grain, and the black berry-bearing alder\* to all other wood. The flesh of the fawn is very good; that of the hind and knobber not absolutely bad; but that of the stag has always a strong and disagreeable taste. The skin and the horns are the most useful parts of this animal. The skin makes a pliable and very durable leather. The horns are used by cutlers, sword-slippers, &c. and a volatile spirit, much employed in medicine, is extracted from them by the chymists.

## S U P P L E M E N T.

It is well known, that, in many animals, as cats, owls, &c. the pupil of the eye contracts prodigiously in the light, and dilates in the dark. But this great contraction and dilatation had never been observed in the eyes of the stag. I received from M. Beccaria, a learned physician and celebrated professor at Pisa, the following letter, dated at Turin, October 28. 1767.

‘I presented a piece of bread,’ says M. Beccaria, ‘to a stag that was confined in an obscure apartment,

\* *Rhamnus frangula* Linn.

‘apartment, to allure him to a window, that I  
 ‘might admire at leisure the rectangular and  
 ‘transverse form of his pupils, which, in a  
 ‘strong light, exceed not half a line in width,  
 ‘by about five lines in length. In a fainter  
 ‘light, their breadth enlarges to more than a  
 ‘line and a half; but still preserve their rectan-  
 ‘gular figure: And, in passing from light to  
 ‘darkness, they dilate about four lines, but al-  
 ‘ways transversely, that is, horizontally, and  
 ‘preserve their rectangular form. These facts  
 ‘may be easily ascertained, by laying the hand  
 ‘upon the eye of a stag; for, whenever the eye  
 ‘is uncovered, the pupil will be seen dilated a-  
 ‘bove four lines.’

From this fact M. Beccaria concludes with probability, that the other species of deer enjoy the same power of contracting and dilating their pupils. But, what is most remarkable, the pupils of cats, owls, and several other animals, contract and dilate vertically, while that of the stag contracts and dilates horizontally.

To the history of the stag, I must add a fact communicated to me by M. le Marquis d’Amazaga, who, to much learning, has joined great experience in the chase.

‘Stags,’ he remarks, ‘shed their horns sooner or later in the month of March, in proportion to their ages: At the end of June, the horns of the old stag are long, and begin to tickle him. It is at this time also, that the stags  
 ‘begin



‘begin to rub off the skin which covers their  
‘horns. At the commencement of August,  
‘their horns begin to assume that consistence  
‘which they retain during the rest of the year  
‘On the 17th of October, the attendants of the  
‘Prince of Condé pursued a stag of six years  
‘old. This was the rutting season, when the  
‘stags are much less vigorous; but we were  
‘surprised to find the animal fly at a great rate,  
‘and lead near six leagues from his harbour.

‘When this stag was seized, we found that  
‘his horns were white, and sprinkled with blood,  
‘as they ought to be at the time they are rub-  
‘bed against the trees; and that they had still  
‘rags of the skin which covers them during the  
‘time of their growth. His horns were diver-  
‘sified with many branches. All the hunters  
‘who were in at the death expressed their sur-  
‘prise at these appearances. But their astonish-  
‘ment was augmented, when they wanted to  
‘remove his testicles; for none were to be found  
‘in the scrotum. But, after opening the body,  
‘two testicles were discovered in the abdomen  
‘about the size of filberds, and we clearly per-  
‘ceived that he had never experienced the ef-  
‘fects of the rut. It is well known, that, during  
‘the months of June, July, and August, the  
‘stags are prodigiously loaded with fat, which  
‘is generally so entirely exhausted about the  
‘middle of September, that nothing but the mus-  
‘cular flesh remains. But this stag had lost  
‘none



‘ none of his fat, because he was never in a  
 ‘ condition for rutting. He had still another  
 ‘ singularity; for, in the right foot he wanted  
 ‘ the middle bone, which, in the left, was half  
 ‘ an inch long, and as large and pointed as a  
 ‘ tooth-pick. *very singular, and so on*

‘ It is well known, that a stag, castrated when  
 ‘ he has no horns, never afterwards acquires  
 ‘ them, and that, if the operation is performed  
 ‘ when his horns are in perfection, they remain  
 ‘ in the same state during life. Hence it ap-  
 ‘ pears, that the very minute organs of genera-  
 ‘ tion above described were sufficient to pro-  
 ‘ duce the annual change of horns; but that  
 ‘ Nature has always proceeded slowly in the con-  
 ‘ formation of this animal; for we could disco-  
 ‘ ver no marks of any accident which could in-  
 ‘ duce us to believe that the order of Nature had  
 ‘ been deranged. It is, therefore, reasonable to  
 ‘ suppose, that this retardation proceeded from  
 ‘ the imbecillity of the organs of generation,  
 ‘ which, however, were sufficient to produce the  
 ‘ fall and renewal of the horns, since the cab-  
 ‘ bage or burs demonstrated, that, at the time  
 ‘ this stag was killed, he had had horns annual-  
 ‘ ly from the second to the sixth year.’

‘ These observations of the Marquis d’Ameza-  
 ga seem to prove, in a still stronger manner than  
 any thing formerly remarked, that the fall and  
 renovation of the stag’s horns depend entirely  
 on the presence of the testicles, and partly on  
 their

their being more or less perfect; for, in the instance before us, the testicles being imperfect and too small, the horns, for that reason, in their growth, shedding, and renewal, were much later than in other stags.

Pontoppidan, when speaking of the Norwegian stags, remarks, 'that they are only found in the dioceses of Bergen and Drontheim; that they sometimes swim in flocks across the straits between the continent and the neighbouring islands, resting their heads upon each other's crupper; and that, when the chief of the file is fatigued, he retires behind to repose himself, and the most vigorous occupies his place \*.'

It has been thought, that the stags of our forests might, by treating them with care and gentleness, as the Laplanders manage the reindeer, be rendered domestic. Upon this subject, M. le Vicomte de Querhoënt has communicated to me the following fact. Stags were first brought to the isle of France by the Portuguese. They are small, and of a grayer colour than those of Europe, from whom, however, they derived their origin. When the French took possession of this island, they found great numbers of these stags, of which they destroyed a part, and the remainder took refuge in the most retired places. They are now rendered domestic, and

\* Pontoppidan's Nat. Hist. of Norway.

and some of the inhabitants keep large flocks of them.

I have seen, at l'Ecole Veterinaire, a small kind of stag, which was said to have been brought from the Cape of Good Hope. Its skin was interspersed with white spots, like that of the axis. It was called the *Hog-stag*, because its legs were thicker, and it had not the same agility of body as the common kind. The figure of it is represented in the Plate. Its length from the muzzle to the extremity of the body, was only three feet four inches and a half; the legs were short, and the feet and hoofs very small; the colour yellow, mixed with white spots; the eye black and open, with large black hair on the upper eye-lid; the nostrils black, with a blackish band at the corners of the mouth; the colour of the head the same with that of the belly, only mixed with gray, and brown on the chanfrin and sides of the eyes; the ears very large, garnished on the inside with white hairs, and with smooth hair mixed with yellow on the outside. The horns of this stag were eleven inches seven lines in length, and ten lines thick. The top of the back was browner than the rest of the body. The tail was yellow above and white below; and the legs were of a brownish black colour\*.

This

\* Mr Pennant, in his Synopsis of Quadrupeds, which was published in the year 1771, has described this animal as a distinct species of deer. It is surprising, that this circumstance should

This animal seems to approach nearer to the stag than the fallow-deer, as appears from the bare inspection of his horns.

## THE

should have escaped our author, especially as the two descriptions vary in several particulars. Mr Pennant's words are :  
 ' PORCINE DEER, with slender trifurcated horns, thirteen  
 ' inches long, six inches distant at the base ; head ten inches  
 ' and a half long : Body, from the tip of the nose to the tail,  
 ' three feet six inches : Height, from the shoulders to the hoof,  
 ' two feet two inches, and about two inches higher behind :  
 ' Length of the tail eight inches : Body thick and clumsy :  
 ' Legs fine and slender : Colour on the upper part of the neck,  
 ' body, and sides, brown ; belly and rump of a lighter colour.  
 ' In possession of Lord Clive ; brought from some part of India ;  
 ' called, from the thickness of their body, *Hog Deer*.' *Synops.*  
*of quad.* p. 52.



Plate LIII.



STAG or HART

*A. Belli sculp.*



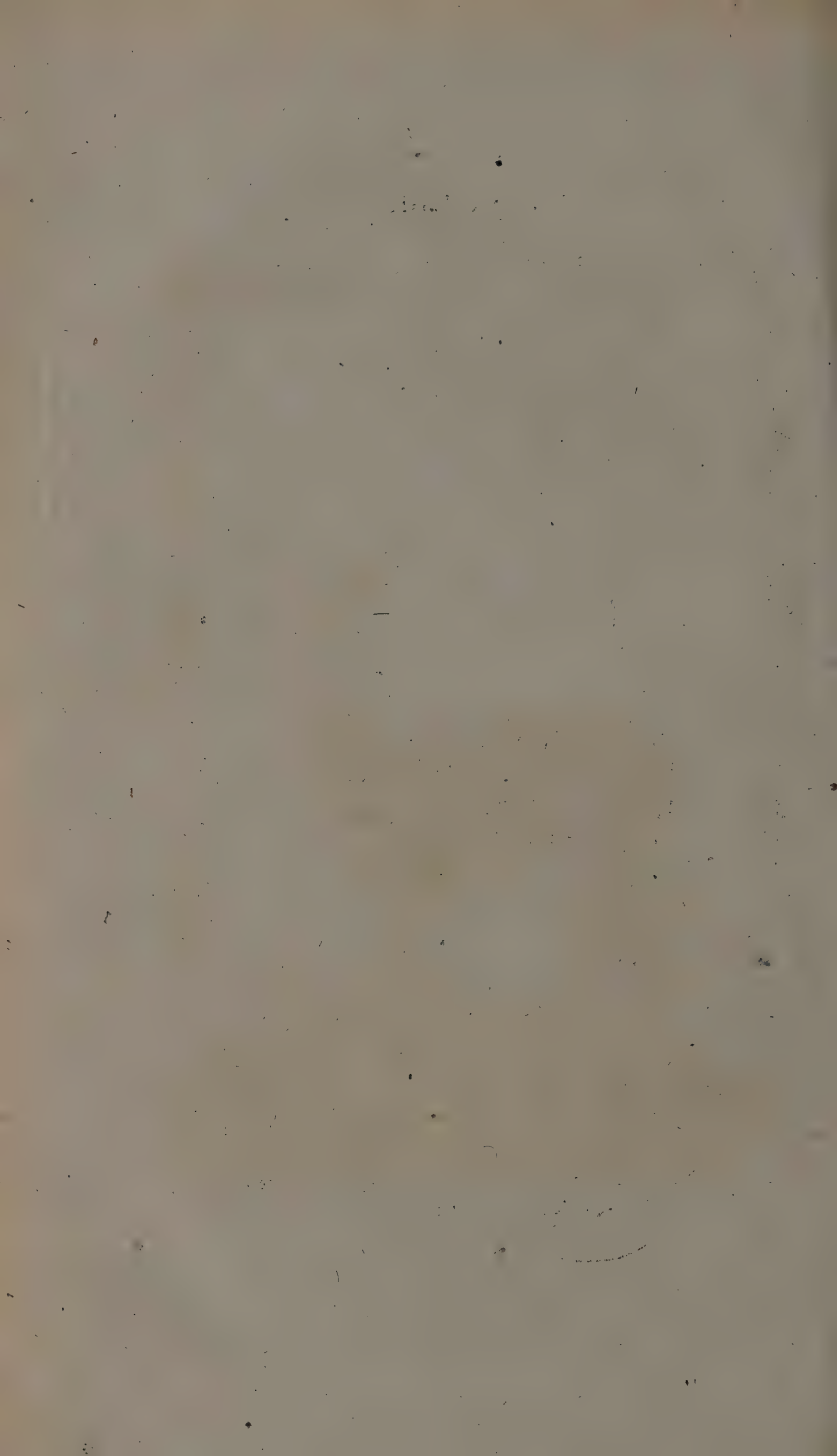


Plate LIV.



*A. Bell Sculp.*

FEMALE RED DEER

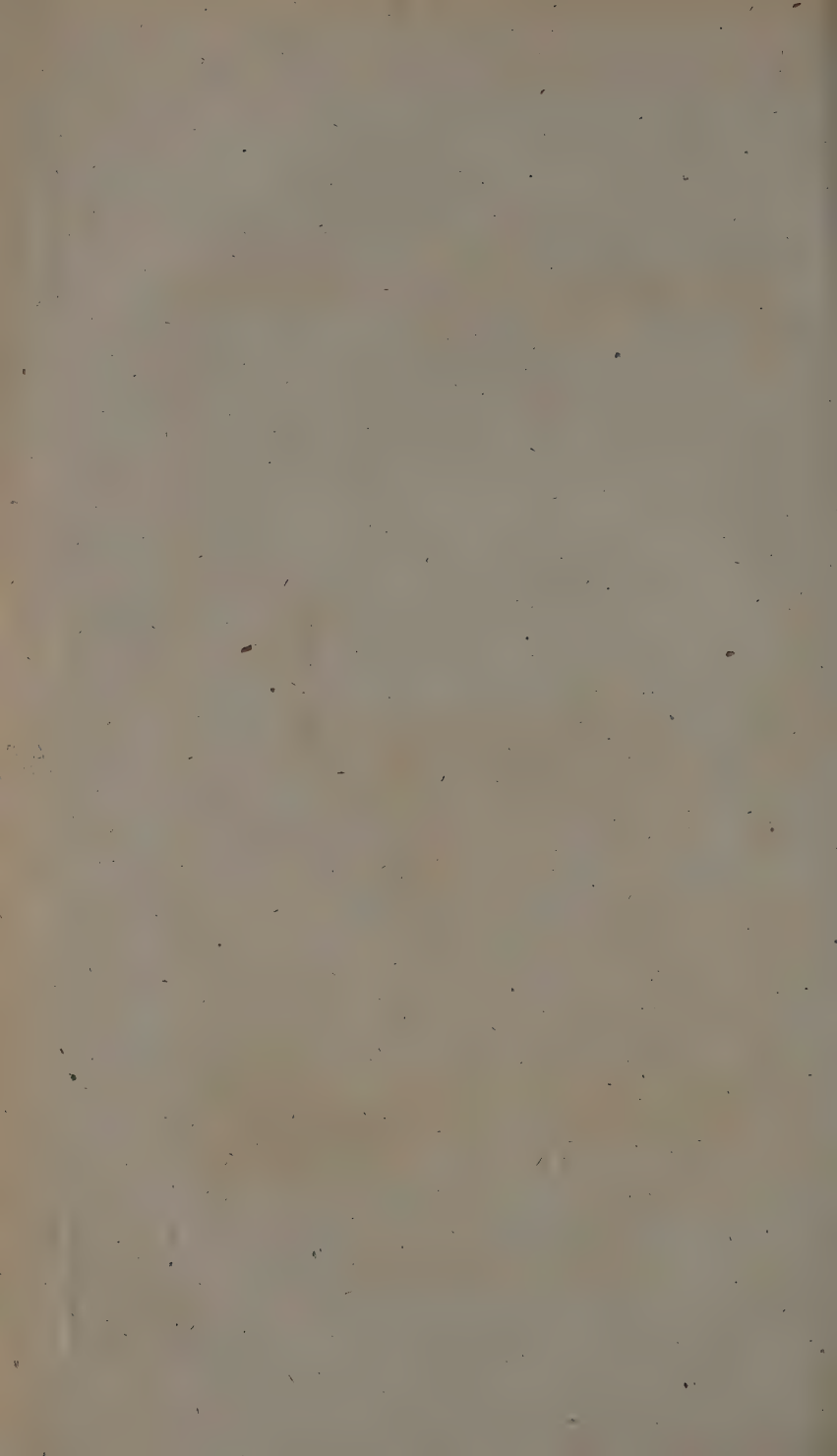




Plate LV.



*A Bell Sculp.*

SMALL RED DEER



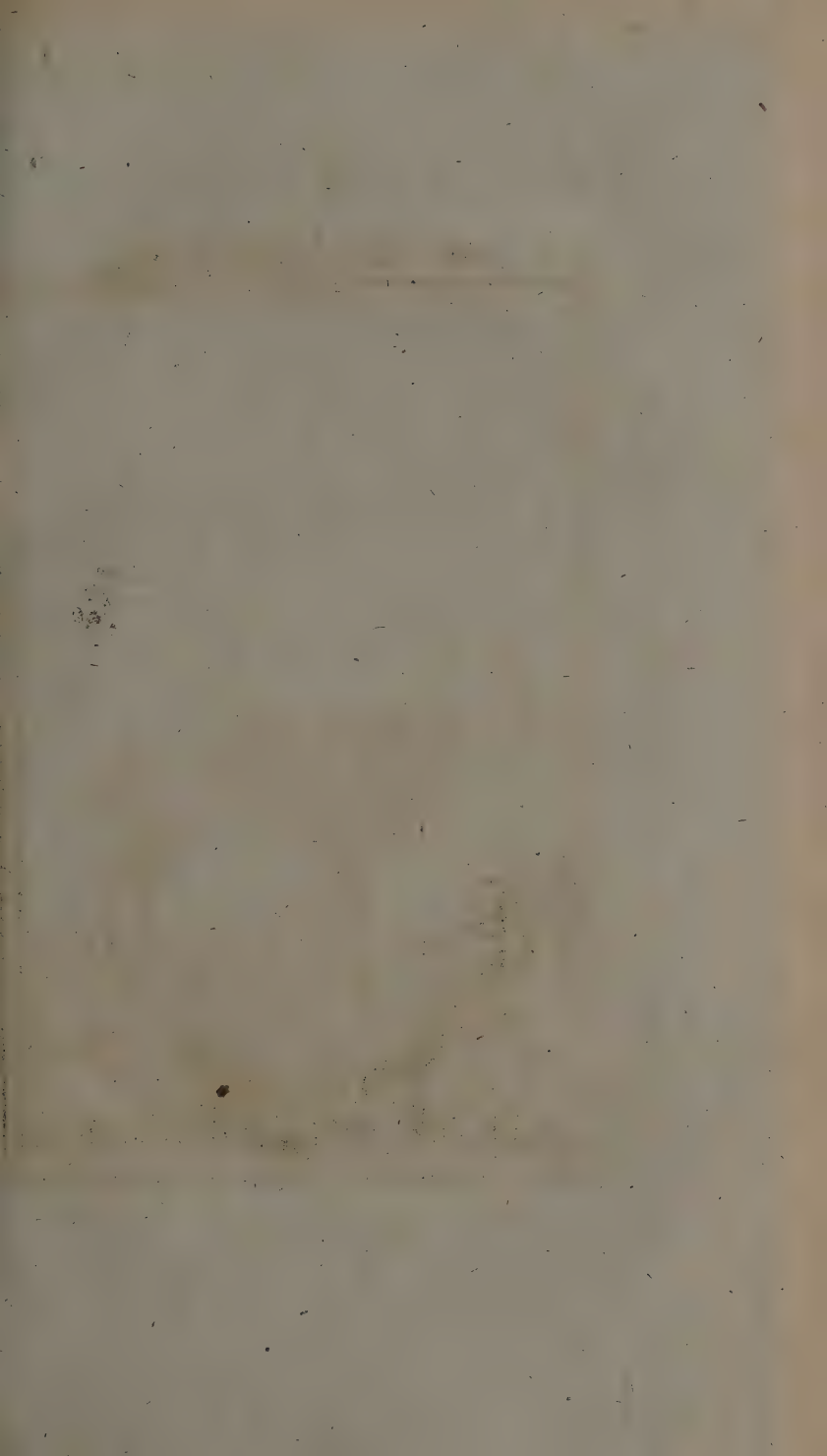


Plate LVI.



*Albert Smith*

HOG STAG.

# THE FALLOW DEER\*.

NO species of animals makes so near an approach to another as the fallow deer to that of the stag. But, though their similarity be great in every respect, they fly from each other, never intermix, and, of course, give rise to no intermediate race. It is even rare to find fallow deer in a country much frequented by stags, unless they are industriously transported thither. Their nature seems to be less rustic and robust than that of the stag; and they are likewise less common in the forests. They are kept in parks, where

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\* The horns of the fallow deer are palmated at their ends, and branched on the hinder side. It has two slender brow antlers, and above them two slender branches. The colour of this deer is various, being reddish, deep brown, white, or spotted.

In Greek *προξ*; in Latin, *Dama*; in Italian, *Daino*; in Spanish, *Daino*, *Corza*; in German, *Dam-hirsch*; in Swedish, *Dof*, *Dof-biort*; in Polish, *Lanii*.

*Euriceros Appiani*.

*Platyceros Plinii*.

*Dama vulgaris*; *Aldrov. quad. bisulc.* p. 741.

*Dama vulgaris* five recentiorum; *Gesner. Icon. anim. quad.* p. 51.

*Cervus platyceros*; *Raii synops. quad.* p. 85.

*Cervus dama*, cornibus ramosis, recurvatis, compressis; summitate palmata; *Lynn. syst. nat.* p. 93.

*Cervus palmatus*, *Dama-cervus*; *Klein. quad. hist. nat.* p. 25.

where they may be said to be half domestic. More of them are reared in England than in any other country of Europe; and the English are extremely fond of their venison. The dogs also prefer the flesh of this deer to that of all other animals; and, after they have once eat of it, they are extremely apt, in the chase of the stag or roe deer, to change their course when they perceive the scent of the fallow deer. In some provinces of France, and in the neighbourhood of Paris, there are fallow deer, as also in Spain and Germany. Those of America were probably transported from Europe. It seems to be an animal peculiar to the temperate climates; for there are none in Russia, and they are seldom met with in Sweden or other northern countries\*.

The stags are more generally diffused over Europe; they are even found in Norway, and all the northern regions, Lapland perhaps excepted. They are also frequent in Asia, especially in Tartary†, and the northern provinces of China. They are likewise found in America; for those of Canada‡ differ from ours in the length of their horns only, and the direction of their

\* Linn. Faun. Suéc.

† Description de l'Inde, par Marc. Paul, liv. i. p. 38. Lettres edifiantes, recueil 26. p. 371.

‡ The Canadian stag is precisely the same with that of France; *description de la Nouv. France, par Charlevoix, tom. 13. p. 129.*

their antlers \*, which is sometimes not straight, as in the common stag, but turned backward, so that the end of each points to the stem of the horns. But this form of the horns is not absolutely peculiar to the stag of Canada ; for we find similar horns engraven in *la Venerie de du Fouilloux* † ; and those of the Corsican stag have straight antlers ; which is a sufficient proof that the Canadian stag is only a variety, to which stags of all countries are subject. There are likewise horns which have a number of antlers on their summits, in form of a crown. These are rarely found in France ; but, says Du Fouilloux ‡, they come from Russia and Germany. This is another variety only, and not a species different from the common kind. Hence, in Canada, as well as in France, most stags have straight antlers ; but, in the former, they are larger and thicker ; because they find, in these uninhabited regions, more nourishment and repose than in populous countries. There are large and small stags in America, as well as in Europe. But, however generally this species is diffused, it seems to be limited to cold and temperate climates. The stags of Mexico and South America, those of Cayenne, those called *Gange stags*, mentioned in M. Perrault's memoirs, under

H 2. der

\* See the figure of the Canadian stag, in *l'hist. des animaux par M. Perrault*.

† *La Venerie de Jacques du Fouilloux*, p. 22.

‡ *Ibid.* p. 20.



der the name of *Sardinian binds*, those denominated *Cape stags*, and those of Guiney and other warm countries, belong not to the common species, as will appear when the particular hist<sup>y</sup> of each is given.

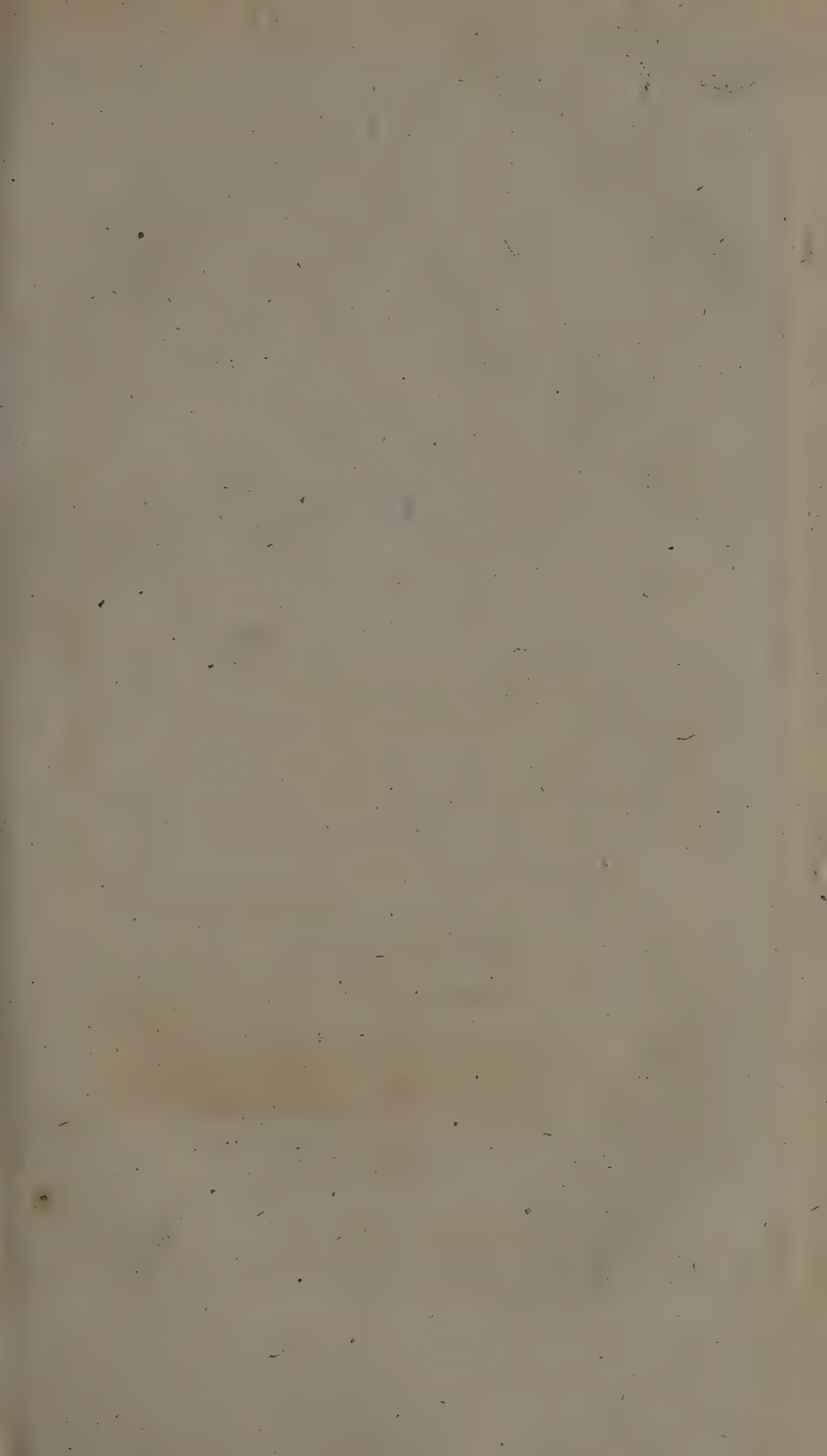
As the fallow deer is less savage, more delicate, and approaches nearer to the domestic state than the stag, he is also subject to a greater number of varieties. Beside the common and the white fallow deer, there are several other varieties, as those of Spain, which are nearly as large as the stag ; but their neck is not so thick, and their colour is darker, with a blackish tail, not white below, and longer than that of the common kind ; those of Virginia, which are almost as large as those of Spain, and remarkable for the great size of their genital organs : Others have a compressed forehead, with the ears and tail longer than those of the common fallow deer, are marked with a white spot upon the hoofs of the hind feet ; others are spotted with white, black, and yellow ; and others are entirely black. All these have their horns flatter, broader, and better garnished with antlers than those of the stag ; they likewise incline more inwardly, and are more palmated at the points ; and, when the horns are very strong, the largest antlers are sometimes terminated by small palms. The tail of the common fallow deer is longer than that of the stag, and its hair is brighter. The horns of the fallow deer shed, like those of the stag ;

but

but they fall off later, and are renewed nearly at the same time. Their rutting season arrives fifteen days or three weeks after that of the stag. The males then bellow frequently, but with a low and interrupted voice. They are not so furious as the stag, nor exhaust themselves by rutting. They never depart from their own country in quest of females; but they dispute and fight for the possession of their mistresses. They associate in herds, which almost always keep together. When there is a great number in one park, they generally form themselves into two distinct troops, which soon become hostile, because they both wish to occupy the same part of the inclosure. Each of these troops has its own chief, who marches foremost; and he is always the oldest and strongest of the flock. The others follow him; and the whole draw up in order of battle, to force the other troop from the best pasture. The order with which these combats are conducted is very singular. They make regular attacks, fight with courage, mutually support each other, and never think themselves vanquished by a single check; for the battle is daily renewed, till the weaker are completely defeated, and obliged to remain in the worst pasture. They love elevated and hilly countries. When chased, they run not out, like the stag, but double, and endeavour to conceal themselves from the dogs by artifice, and by substituting another animal in their place. However, when

fatigued and heated, they take the water, but never attempt to cross such extensive rivers as the stag. Thus, between the chase of the fallow deer and stag, there is no material difference. Their knowledge and instincts, their shifts and doublings, are the same, only they are more frequently practised by the fallow deer. As he is less enterprising, and runs not so far before the dogs, he has oftener occasion to change, or substitute another in his place, to double, return upon his former tracts, &c. which renders the hunting of the fallow deer more subject to inconveniencies than that of the stag. Besides, as he is smaller and lighter, the impressions of his feet upon the ground are lighter, and the branches he knocks off from the trees with his horns are smaller. Hence the dogs are less apt to observe the change, or substitution of another animal, and it is more difficult to bring them into the scent when at fault.

The fallow deer is very easily tamed, and eats many substances which are rejected by the stag. He likewise preserves his fat or venison much better; for he is not rendered meagre by rutting, though followed by the longest and severest winters; and he is nearly in the same condition during the whole year. He browses closer than the stag, which makes the trees or bushes cut by him more difficult to shoot than those cut by the stag. The young fallow deer eat quicker, and with more avidity than the old. They rumi-  
nate;



Platè LVII.



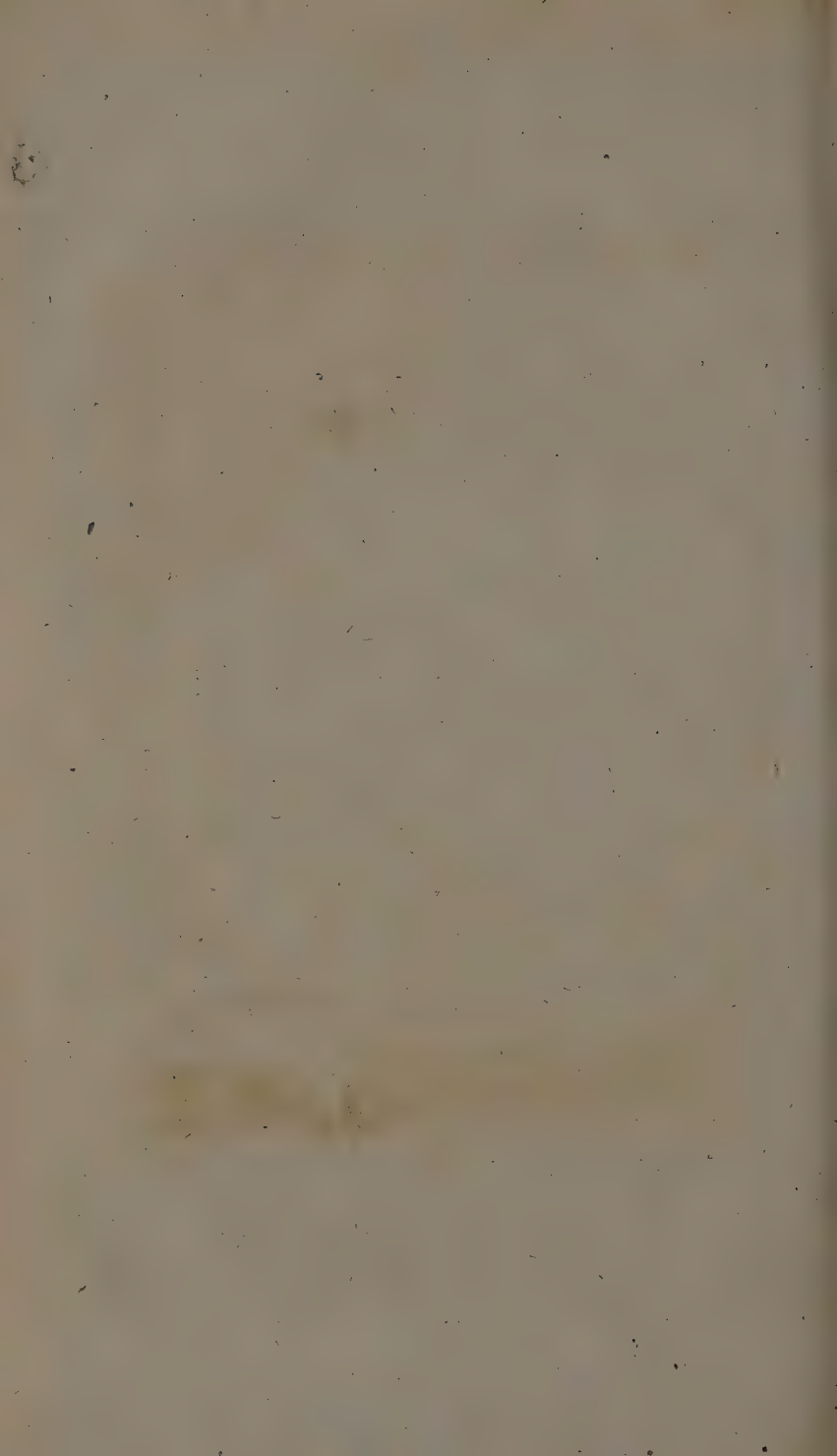
FALLOW DEER



Plate I.VIII.



FEMALE FALLOW DEER



nate ; they search for the females in the second year, and attach not themselves to one, like the roe buck, but love variety, like the stag. The female goes with young eight months and some days. Like the hind, she produces one, sometimes two, and very rarely three fawns. They are capable of engendering and producing from the age of two to that of fifteen or sixteen years. Lastly, the fallow deer resemble the stag in almost all their natural dispositions and habits ; the greatest difference between these two animals consists in the duration of their lives. We formerly remarked, from the testimony of hunters, that the stag lives thirty-five or forty years ; and, from the same authority, we learn that the fallow deer live only about twenty years. As they are smaller, it is probable that their growth is sooner accomplished than that of the stag ; because, in all animals, the duration of life is proportioned to the time of growing, and not to the time of gestation ; for here the time of gestation is the same. Besides, in other species, as that of the ox, though the time of gestation be long, the duration of life is short. Of course, we ought not to measure the duration of life by the time of gestation, but by that of the growth, reckoning from birth, nearly to the full expansion of the body\*.

T H E

\* For a few supplementary remarks on the fallow deer, see the article *Axis*.

## THE ROE DEER\*.

**A**S the stag is the noblest inhabitant of the wood, he occupies the deepest shades of the forest, and the most elevated ridges of those mountains which are covered with lofty trees. The roe deer, as if inferior in species, contents himself

\* The roe deer has strong, upright, rugged, and trifurcated horns, from six to eight inches long. The length, from nose to tail, is three feet nine inches; the height before, is two feet three inches; behind, two feet seven inches; the length of the tail is only one inch. The weight of a full grown buck is near 60 lb. The hair in summer is very short and smooth. The ends of the hairs are of a deep red colour, and the bottoms of a dark gray. In winter, the hairs are very long, and hoary at the tips, except at the back, where they are often very dark. The legs are slender; and below the first joint of the hind legs there is a tuft of long hair. The rump, and under side of the tail are white; *Pennant, synops. of quad. p. 53.*

The name of the Roe deer in Greek is *Ααρως*; in Latin, *Capreolus*, *Capriolus*; in Italian, *Capriolo*; in Spanish, *Zorlito*, *Cabronzillo montes*; in Portuguese, *Gabra montes*; in German, *Rehe*; in Swedish, *Ra diur*; in Danish, *Raa-diur*; in Scots, *Roe-buck*.

*Dorcas Aristotelis, Caprea Plinii.*

*Capra, Capreolus, five Dorcas; Gesner. Icon. Anim. quad. p. 64.*

*Capriolus; Johnston, Hist. anim. quad. tab. 33.*

*Dorcas Scotiae perfamiliaris; Charleton de differentiis animal. p. 9. 12.*

*Capreolus vulgo. Cervulus silvestris septentrionalis nostras; Raii synops. quad. p. 89.*

*Cervus capreolus, cornibus ramosis, teretibus, erectis; summitate bifida, Linn. syst. nat. p. 94.*

*Cervus minimus, Capreolus, Cervulus, Caprea, cornibus brevibus, ramosis, annuatim deciduis; Klein. quad. hist. nat. p. 24.*

himself with a humbler residence, and generally dwells among the thick foliage of young brushwood. But, if he is inferior to the stag in dignity, strength, and stature, he is endowed with more gracefulness, vivacity, and courage\*. He is superior in gaiety, neatness, and sprightliness. His figure is more elegant and handsome. His eyes are more brilliant and animated. His limbs are more nimble, his movements quicker, and he bounds, seemingly without effort, with equal vigour and agility. His coat, or hair, is always clean, smooth, and glossy. He never wallows in the mire like the stag. He delights in dry and elevated situations, where the air is purest. He is likewise more crafty, conceals himself with greater address, is more difficult to trace, and derives superior resources from instinct: For, though he has the misfortune to leave behind him a stronger scent than the stag, which redoubles the ardour and appetite of the dogs, he knows how to withdraw himself from their pursuit, by the rapidity with which he begins his flight, and by his numerous doublings. He delays not his arts of defence till his strength fails him; but as, soon as he finds that the first efforts of a rapid chase have been unsuccessful, he repeatedly returns to his former steps; and, after confounding by these opposite movements, the

\* When the fawns of the roe deer are attacked, he defends them with courage, and, though smaller, he has strength enough to combat a young stag, and put him to flight; *Nouv. Traité de la Venerie*, p. 178.



the direction he has taken, after intermixing the present with the past emanations from his body, he rises from the earth by a great bound, and, retiring to a side, he lies down flat on his belly, and, in this immoveable situation, he allows the whole troop of his deceived enemies to pass very near him.

The roe deer differs from the stag and fallow deer in disposition, temperament, manners, and almost every natural habit. Instead of associating in herds, they live in separate families. The father, mother, and young, go together, and never mix with strangers. They are constant in their amours, and never unfaithful like the stag. As the females generally produce two fawns, the one male and the other female, these young animals brought up and nourished together, acquire a mutual affection so strong, that they never quit each other, unless one of them meets with a misfortune, which never ought to separate lovers. This attachment is more than love; for, though always together, they feel the ardour of the rut but once a year, and it continues only fifteen days, commencing at the end of October, and ending before the fifteenth day of November. They are not then, like the stag, overloaded with fat: They have no strong smell, no fury, in a word, nothing that can change the state of their bodies. During this period, they indeed suffer not their fawns to remain with them. The father drives them off, as if he meant

to oblige them to yield their place to those which are to succeed, and to form new families for themselves. However, after the rutting season is past, the fawns return to their mother, and remain with her some time; after which they separate forever, and remove to a distance from the place which gave them birth.

The female goes with young five months and a half, and brings forth about the end of April or beginning of May. The hinds, as formerly remarked, go with young above eight months; and this difference alone is sufficient to prove, that these animals are so remote from each other in species, as to prevent their ever intermixing or producing an intermediate race. By this difference, as well as those of figure and size, they approach the goat as much as they recede from the stag; for the goat goes with young nearly the same time, and the roe deer may be regarded as a wild goat, which, feeding solely on wood, carries *wood* instead of horns. The female, when about to bring forth, separates from the male. To avoid the wolf, who is her most dangerous enemy, she conceals herself in the deepest recesses of the forest. In ten or twelve days, the fawns acquire strength sufficient to enable them to follow her. When threatened with danger, she hides them in a close thicket, and, to preserve them, presents herself to be chased. But, notwithstanding all her care and anxiety, the young are sometimes carried off by men, dogs, or wolves.

wolves. This is indeed the time of their greatest destruction. Of this species, which is not very numerous, I know, from experience, that more are destroyed in the month of May, than during all the rest of the year. I often live in a part of the country \* where roe deer are greatly esteemed. Many fawns are annually brought me alive by men, and others killed by dogs, without reckoning those which are destroyed by wolves: And I have observed, during the space of more than twenty-five years, that, as if there were a perfect equilibrium between the causes of destruction and renovation, their number is always nearly equal in the same districts. It is not difficult to count them; for they are nowhere numerous, and they live separately in distinct families: In a coppice, for example, of 100 acres, there will be one family, or from three to five individuals; for a female, which generally produces two fawns, sometimes brings forth but one, and sometimes, though very seldom, three. In another district, of double the extent, there will be seven or eight, that is, two families: and I have remarked, that each district always harbours an equal number, except when the winters have been extremely rigorous and long: In this case, the whole family are destroyed; but it is replaced by another the following year; and those districts, for which they have a predilection, are always inhabited nearly by an equal

\* At Montbard in Burgundy.

equal number. It is alledged, however, that, in general, their number is diminishing. There are whole provinces, it must be acknowledged, of France, where not one of them is to be found. Though common in Scotland \*, there are none in England. They are very rare in Italy; and they are now more scarce in Sweden than formerly, &c. But this effect may have proceeded from the diminution of forests, or from some very severe winter, like that of the year 1709, which almost destroyed the whole roe deer of Burgundy; so that several years passed before the species was recruited. Besides, they are not equally fond of every country; for, in the same countries, they prefer particular places. They love hills, or plains on the tops of mountains. They never stay in the deepest recesses of the forests, nor in the middle of extensive woods; but give the preference to the skirts or projections of woods which are surrounded with cultivated fields, and to open coppices which produce the berry-bearing alder, brambles, &c.

The fawns continue with their parents eight or nine months, and, when separated, about the end of the first year of their age, their horns begin to appear in the form of two knobs much less than those of the stag. There is still a greater difference between these two animals: The horns of the stag shed in the spring, and are renewed

\* They are not very common in Scotland; for they exist nowhere but in what is called the *Highlands*, or northern mountains of Scotland.



newed in summer ; but those of the roe deer fall off at the end of autumn, and are replaced in winter. Several causes concur in producing these different effects. In summer, the stag takes a great deal of nourishment, and grows exceedingly fat ; he next exhausts himself so much in the rutting season, that the whole winter is necessary to recover his vigour. But, during this season, instead of superabundant nourishment, he is half starved for want of subsistence, and, consequently, his horns cannot begin to shoot till the spring, when his nourishment begins to be redundant. The roe deer, on the contrary, who is never so much wasted, has no occasion for equal reparation ; and, as he is never loaded with fat, as no change is produced in him by rutting, but continues always nearly the same, he has at all times a redundancy of nourishment ; so that, even in winter, and a short time after rutting, he sheds and renews his horns. Thus, in all these animals, the redundant organic nourishment, before it is determined to the seminal reservoirs, and forms the seminal fluid, is transferred to the head, and manifests itself externally by the production of horns ; in the same manner as in man, the hair and the beard announce and precede the secretion of the seminal fluid : And it is apparent, that these vegetable productions, as they may be denominated, are formed of a redundant organic substance, but still imperfect, and mixed with brute particles, since



since they preserve, in their growth and substance, the qualities of vegetables. But the seminal fluid, the production of which is not so early, is a matter purely organic, deprived entirely of its brute particles, and perfectly assimilated to the body of the animal.

When the roe deer has renewed his horns, he rubs them against the trees, like the stag, in order to tear off the skin with which they are covered ; and this commonly happens in the month of March, before the trees begin to shoot. Hence it is not the sap of the wood which colours the horns of the roe deer. However, the horns are brown when the animal is brown, and yellow when he is red ; and, consequently, the colour of the horns proceeds, as formerly remarked \*, solely from the nature of the animal, and the impression of the air. The second horns of the roe have two or three antlers in each side ; the third, three or four ; the fourth, four or five, and they seldom have more. We distinguish the old ones by the thickness of the stems, the largeness of the bur, of the pearlins, &c. As long as the horns continue soft, they are extremely sensible : Of this I have had a striking example : The young shoot of a roe buck's horn was cut off with a ball. The animal was stunned, and fell down as if he had been dead. The shooter, who was near, seized him by the foot ; but the buck, suddenly recovering his

\* See above, History of the stag, p. 103.

his senses and his strength, dragged the man, though he was strong and alert, thirty paces into the wood. After killing him with a knife, we discovered that he had received no other wound. Besides, it is well known, that flies are very troublesome to the stag: When his horns are growing, he retires to the deepest parts of the wood, where the flies are less numerous; because, when they fix upon the tender horns, the irritation they occasion is insupportable. Thus there is an intimate communication between the soft parts of the horns, and the whole nervous system of the animal. The roe buck, who has nothing to apprehend from the flies, because he renews his horns in winter, never retires in this manner; but he walks with caution, and carries his head low, lest he should touch the branches.

In the stag, the fallow deer, and roe buck, the frontal bone has two processes, or eminences, on which the horns rest. These processes begin to shoot at the age of five or six months, soon after acquire their full growth, and, instead of rising higher in proportion as the animal advances in years, they annually sink and diminish; so that, in old stags or roe bucks, the burs are nearly supported upon the frontal bone, the processes of which having then become very broad and very short: This is the most certain mark by which the age of these animals can be distinguished. At first sight this fact appears to

be

be singular, but admits of an easy explanation, when it is considered, that the horns, supported by these processes, press against them during the whole time of growth, which continues for several months every year: Hence these bones, however hard, must become broader, and sink lower annually, by the great and long continued pressure they receive from every renewal of the animal's horns. It is for the same reason, that, though the stems and burs, or rings, always grow thicker in proportion to the age of the animal, the height of the horns and the number of antlers diminish so fast, that, when he is very old, they are only two thick knobs, with very small antlers.

As the female roe goes with young five months and a half only, and as the growth of the fawn is more rapid than that of the stag, the duration of her life is much shorter, seldom extending, I imagine, beyond twelve or fifteen years. I have reared several of them; but could never preserve them above five or six years. They are very delicate in the choice of their food, require a great deal of exercise, fine air, and much room, which is the reason why they are unable, except in the first years of their growth, to resist the inconveniences of a domestic life. To make a male live comfortably, he must be furnished with a female, and a park of a hundred acres. They may be tamed, but can never be rendered obedient or familiar. They always retain a por-

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tion of their natural wildness, are easily terrified, and then run with such force and precipitation against the walls, that they often break their limbs. However tame they may be, they cannot be trusted; for the males particularly are subject to dangerous caprices; they take an aversion at certain persons, and make furious attacks with their horns, the blows of which are sufficient to knock a man to the ground, after which they continue to tread on him with their feet. The roe buck bellows not so frequently, nor with so loud or so strong a voice, as the stag. The young ones utter a short and plaintive cry, *mi....mi*, by which they indicate their want of food. This sound is easily imitated; and the mother, deceived by the *call*, will come up to the very muzzle of the hunter's gun.

In winter, the roe bucks frequent the thickest coppices, and feed upon brambles, broom, heath, the catkins of the hazel, willow, &c. In spring, they repair to the more open brushwood, and eat the buds and young leaves of almost every tree. This warm food ferments in their stomachs, and intoxicates them to such a degree that they are easily surprised. They know not where they are going, and not unfrequently come out of the wood, and sometimes approach flocks of cattle, and the habitations of men. In summer, they dwell in the more elevated coppices, from which they seldom depart; except in very dry weather, when they go to drink at

some



some fountain; for, when the dews abound, or the leaves are moistened with rain, they never drink. They are delicate in the choice of their food; they eat not with avidity, like the stag, and they seldom approach the cultivated fields, because they prefer the berry-bearing alder and bramble to grain or pot-herbs of any kind.

Though the flesh of these animals be excellent food; yet it admits of much choice. The quality of their venison depends chiefly on the country they inhabit; and even the best countries produce good and bad kinds. The flesh of the brown roe buck is finer than that of the red. All the males, after the age of two years, have hard and ill-tasted flesh; but that of the females, though farther advanced in years, is more tender. The flesh of the fawns, when very young, is loose and soft; but, at the age of eighteen months, it is in its highest state of perfection. Those which live in plains and valleys are not good; those that come from moist countries are still worse; those brought up in parks are insipid; and, lastly, there are no good roe bucks but those who inhabit dry and elevated countries, interspersed with hills, woods, cultivated and fallow lands, where they enjoy plenty of air, food, freedom, and solitude; for those which have been often disturbed are meagre, and the flesh of those that have been frequently hunted is dry and insipid.



This species, which is less numerous than that of the stag, and very rare in many parts of Europe, seems to be much more abundant in America, where there are two varieties, the red, which is the largest, and the brown, which has a white spot behind, and is smaller : And, as they are found in the northern as well as the southern parts of America, it is probable that they differ more from each other than from those of Europe. They are very common, for example, in Louisiana\*, and larger than those of France. They are likewise found in Brasil ; for the animal called *Cujuacu-apara* differs not more from our roe buck than the stag of Canada from our stag. There is indeed a little variation in the figure of the horns, as appears from Perrault's figure of the Canadian stag, compared with the description and figure of the Brazilian stag given by Piso. ' In ' Brasil,' says Piso, ' there are roe bucks, of ' which some have no horns, and are called ' *Cujuacu-été*, and others have horns, and are ' called *Cujuacu-apara*. The latter are smaller ' than the former ; their hair is smooth, glossy, ' and mixed with brown and white, especially ' when the animals are young ; for the white is ' effaced with age. The foot is divided into two ' black

\* The flesh of the roe buck is much used in Louisiana. This animal is somewhat larger than the European kind, and his horns are similar to those of the stag ; but he differs both in the coat and the colour. He serves the inhabitants in place of mutton ; *Mem. sur la Louisiane*, par M. Dumont, tom. 1. p. 75.

‘black toes, upon each of which there is a smaller one superinduced; the tail is short; the eyes large and black; the nostrils open; the horns are of a middle size, and fall off annually. The female goes with young five or six months. They may be tamed \*,’ &c. Margraave adds, ‘that the horns of the *apara* have three branches, and that the inferior branch is longest and divided into two.’ From these descriptions, it is apparent, that the *apara* is only a variety of our roe buck; and Ray suspects †, that the *Cujuaca-apara* is the male, and the *Cujuaca-été* the female, and that they both belong to the same species. I should willingly assent to Mr Ray’s opinion, if Piso had not expressly said, that those which have horns are smaller than the other kind. It is not probable that, at Brasil, the females of this species should be larger than the males, since every where else they are smaller. At the same time, though I believe the *Cujuaca-apara* to be only a variety of our roe buck, to which we may also add the *Capreolus marinus* of Johnston, I shall not decide concerning the *Cujuaca-été* till farther information be obtained.

### I 3 SUPPLEMENT.

\* Pison. Hist. Brasil. p. 98. † Raii Synopf. anim. quad. p. 90.

## S U P P L E M E N T.

It has frequently been mentioned, in my original work, that the common colours of wild animals are yellow, brown, and gray, and that the domestic state gives rise to white fallow deer, white rabbits, &c. I find, however, that Nature alone sometimes produces the same effect upon wild animals. M. l'Abbé de la Villette informs me, that a man belonging to his brother's estate, near Orgelet in Franche-comté, brought him two old roe deers, one of which was of the common colour, and the other, being a female, was as white as milk, and had no black but on the hoofs and the extremity of the nose\*.

Roe bucks, similar to those of Europe, are found throughout all North America; only they are larger, and their size increases in proportion as the climate becomes more temperate. The roe bucks of Louisiana are generally double the size of those of France†. M. de Fontenelle adds, that they are easily tamed. In this he is supported by the evidence of M. Kalm, who mentions a roe buck which went daily to the wood

\* Extract of a letter from M. l'Abbé de la Villette a M. de Buffon, dated Lon-le-Saumier, June 17. 1773.

† Extract of a letter from M. de Fontenelle, King's physician at New Orleans, to M. de Buffon.

wood in quest of food, and returned to his house in the evening\*. But, in South America, this species is subject to great varieties. M. de la Borde, King's physician at Cayenne, says, ' that they have there four kinds of stags, called indiscriminately, both males and females, by the name of *hinds*. The first kind, called *wood* or *red hinds*, keep perpetually in the thickest parts of the forest, to avoid being tormented by the flies. This kind is taller and thicker than that called the *savanna hind*, and yet it is exceeded in size by the *barallou hind*, which is the second species, and of the same colour with the wood hind. When the males are old, their horns consist of one branch only, and they at no period exceed four or five inches in height. These barallou hinds are rare, and combat the wood hinds. In these two species, at the side of each nostril, there are two considerable glands which secrete a white, foetid humour.

' The third species is called the *savanna hind*. Its coat is grayish, and its limbs and body longer than the preceding. M. de la Borde was assured by the hunters, that the savanna hind had no glands on the nostrils, and that it was less savage, and even so curious as to approach men.

' The fourth species is the *savanna hind*, which is smaller and more common than the other three. They are not so wild, and their horns

\* Voyage de Pierre Kalm, tom. 2. p. 350.



‘ horns are longer and more palmated or branched than those of the other three kinds. They are called *savanna hinds*, because they frequent the watery savannas, and lands covered with marshes.

‘ These animals feed upon the manioc, and often destroy the plantations. Their flesh is very tender and well-tasted. Both the old and the young are used as food, and they are superior to the European stags. They tame so easily, that they run about the streets of Cayenne, and go out of the town and return, without being afraid of any object. The females even go into the woods in quest of wild males, and afterwards return with their fawns.

‘ The caricou is the smallest; his hair is of a whitish gray colour, and his horns are straight and pointed. He belongs rather to the roe buck than to the stag. He never appears near inhabited places; but is very common in large woods. However, he is easily tamed; and the female brings forth only one fawn every year.’

If the above descriptions be compared with what is afterwards remarked, in the history of the *Mazame*, or Mexican deer, it will appear, that all these pretended species of stags or hinds are only roe bucks, the varieties of which are more numerous in the New than in the Old Continent.

THE





Plate LIX.



ROEBUCK

Plate LX.



*A. Bell Sculp.*

FEMALE ROEBUCK



# T H E   H A R E\*.

**T**HE most numerous species of animals are by no means the most useful. Nothing can be more noxious than those multitudes of rats, mice, locusts, caterpillars, and other insects, the fecundity of which Nature seems rather to permit than to ordain. But the species of the hare

\* The hare has two cutting teeth in each jaw; long ears; a short tail; five toes before, and four behind. The ears are tipped with black; the eyes are large and prominent; the chin and whiskers white; the hair on the face, back, and sides, white at the bottom, black in the middle, and tipped with tawny red. The throat and breast are red, the belly white, and the tail black above, and white beneath. The feet are covered with hair, even at the bottom. A large hare weighs eight pounds and a half; its length, from the nose to the tail, is two feet; *Pennant's synops. of quad. p. 248.*

In Greek, *Λαγός*; in Latin, *Lepus*, quasi *Levipēs*; in Italian, *Lepre*; in Spanish, *Leibre*; in Portuguese, *Lebre*; in German, *Hase*; in Swedish, *Hare*; in Dutch, *Hase*; in Polish, *Sa-jonz*; in Russ, *Zaitza*; in Arabian, *Ernab*, *Harneb*, *Arnepb*; in Turkish, *Tausan*; in Persic, *Kargos*; at Brasil, *Thabiti*; in North America, *Soutanda*.

*Lepus, Rati Synops. anim. quad. p. 204. Plinii, lib. 8. c. 55. Gesner, quad. p. 605.*

CHAR. GEN. *Lepus*, dentes primores II. superiores duplicati; interioribus minoribus. CHAR. SPEC. *Lepus timidus*, cauda abbreviata, auriculis apice nigris; *Linn. Syst. Nat. p. 77.*

*Lepus vulgaris cinereus*, cujus venatio animum exhilarat; *Klein. quad. hist. nat. p. 51.*

*Lepus caudatus ex cireneo rufus*; *Briffon. quad. p. 94.*



hare and the rabbit afford to man the double advantage arising from number and utility. The hare is universally diffused over all the climates of the earth. The rabbits, though originally natives of particular climates, multiply so prodigiously wherever they are transported, that, instead of being rooted out, much art is necessary to diminish their number, which is sometimes incommodious.

When we reflect on the amazing fecundity of each species, the rapid and prodigious multiplication of particular animals which come forth in myriads to ravage the earth, we are astonished that they oppress not Nature by their numbers, and, after desolating her productions, fall victims to the universal waste they have created.

We view with terror the approach of those thick clouds, those winged armies of famished insects, which seem to threaten the whole globe with destruction, and, lighting on the fruitful plains of Egypt, or of India, annihilate, in an instant, the labours and the hopes of nations; and, sparing neither grain, nor fruits, nor herbs, nor leaves, nor roots, rob the earth of its verdure, and convert the richest countries into deserts. We behold, descending from the mountains of the north, innumerable multitudes of rats, which, like an animated deluge, overwhelm the plains, spread over the southern provinces, and, after destroying, in their passage, every thing that lives or vegetates, finish their noxious course,  
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by infecting the earth and the air with the putrid emanations of their dead carcases. In the southern regions, we behold, issuing suddenly from the deserts, myriads of ants, which, like an inexhaustible torrent, press forward in continued columns, drive men and animals from their habitations, and never retire till they have produced an universal devastation: And, when men, like the animals, were half savage, and subject to all the laws and excesses of Nature, have not similar inundations of the human species taken place? Have not Normans, Huns, Goths, whole nations, or rather colonies of fierce and brutal people, without habitation or name, suddenly issued from their caverns, and with no other power but what arises from number, overturned cities and empires, and, after laying waste the earth, repeopled it with men equally new and barbarous as themselves?

These great events, these remarkable aeras in the history of the human race, are, however, only slight vicissitudes in the ordinary course of animated Nature, which, in general, is always the same: Its movements are performed on two steady pivots, unlimited fecundity, and those innumerable causes of destruction which reduce the product of this fecundity to a determined measure, and preserve, at all periods nearly an equal number of individuals in each species. And, as those enormous multitudes of animals, which sometimes suddenly appear, vanish without augmenting

menting the common flock, that of the human species, in like manner, continues always the same. The variations of the latter are only slower; because, the life of man being longer than that of small animals, more time is necessary to bring about the alternate changes of augmentation and diminution. But even this time, though it makes a deep impression, because it has been accompanied with horror and desolation, is only an instant in the succession of ages: For, in estimating the whole human species that ever existed, the number of men, like that of all other animals, ought, at all periods, to be nearly the same, since it depends upon the equilibrium of physical causes; and this equilibrium, to which every thing has been long reduced, cannot be infringed either by the efforts of men, or by any moral circumstances, which are only particular effects of those physical causes. Whatever care man may bestow on his own species, he will never render it more numerous in one place, but at the expence of an equal diminution in another. When any portion of the earth is overstocked with men, they disperse or destroy each other, and often establish such laws and customs as give too great a check to this excess of multiplication. In remarkably prolific climates, as in China, Egypt, and Guiney, the inhabitants banish, mutilate, sell, or drown their offspring: In France, and other Catholic countries, they are condemned to perpetual celibacy. Those who exist, usurp easily

easily the rights of those who have no existence : Regarding themselves as necessary beings, they annihilate those which are contingent, and, for their own convenience, suppress future generations. The same restrictions are laid upon man, without his perceiving it, as are imposed upon the other animals : We cherish or multiply, neglect or destroy our species, according to the advantages or inconveniences which result from them : And, as all moral effects depend upon physical causes, which, ever since the earth acquired its consistence, are fixed and permanent, the number of the human species, as well as that of all other animals, must likewise be constant and unalterable. Besides, this fixed state, this constant number, imply not absolute quantities. All physical and moral causes, and the effects that result from them, are balanced, and comprehended within certain limits, which are more or less extended, but never to such a degree as to destroy the equilibrium. As the whole universe is in perpetual motion, as all the powers of matter mutually act upon and counterbalance each other, every effect is produced by a kind of oscillations, to the middle points of which we refer the ordinary course of Nature, and the extremes are those effects which are farthest removed from that course. Hence we find, that, both in animals and vegetables, an excessive multiplication is commonly followed by sterility : Plenty and scarcity alternately succeed each other, and of-

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ten so quickly, that a tolerable judgment may be formed of the produce of one year by that of the preceding year. Apple, plumb, oak, beech, and most fruit and forest trees, produce abundantly but once every other season. When caterpillars, flies, field mice, and other animals multiply to excess in one year, their number is greatly diminished the following year. If insects, during these fertile seasons, multiplied the next in proportion to their numbers, the whole fruits of the earth, all our domestic animals, and even man himself, would fall victims to their rapacity. But the causes of destruction and sterility immediately succeed those which give rise to a redundant multiplication. Neither is this destruction occasioned by contagion : It is a necessary consequence of too great a mass of animated matter collected in one place. In every species, there are particular causes of death, as shall afterwards be shown, which are sufficient to compensate the excess of preceding generations.

I must again remark, that this reasoning is not to be understood in an absolute or even in a strict sense, especially with regard to those species which are not left entirely to the guidance of Nature. Man, and the other animals he has taken under his protection and care, are more abundant than they would be without that attention he bestows on them. But, as this care has also its limits, the augmentation which results from it has long been confined by immutable boundaries. And  
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though, in civilized countries, the human species, as well as domestic animals, are more numerous than in other climates, they never multiply to excess ; because, whenever they become incommo-  
dious, their number is diminished by the same power that produced them.

In districts appropriated to the pleasures of the chase, four or five hundred hares are sometimes killed in the course of a single day's sport. The multiplication of these animals is very rapid. From the first year of their existence, they are always in a condition for propagating. The females go with young only thirty or thirty-one days. They bring forth three or four at a litter, and, immediately afterwards, they receive the male. They likewise admit him during the time of gestation, and, from a peculiar conformation of their organs, they have frequent superfoetations : For the uterus is only a continuation of the vagina, and has neither neck nor orifice, as in other animals ; but, in each horn, there is an orifice opening into the vagina, which dilates during the time of bringing forth. Thus the horns are two distinct uteri, which can act independent of each other ; so that the females of this species are capable of conceiving and bringing forth, at different times, by each uterus ; and, consequently, superfoetations must be as frequent among these animals as they are rare in those which have not a double organ.

It

It is apparent, therefore, that the female hares may be in season and impregnated at all times. Another singularity in their structure proves them to be equally lascivious as they are fertile. The glans of the clitoris is prominent, and nearly as large as that of the male penis; and, as the vulva is hardly visible, and the male, when young, has neither scrotum nor testicles on the outside of the body, it is often difficult to distinguish the females from the males. This peculiarity of structure has risen to the following notions: That hermaphrodite hares are very common; that the males sometimes bring forth young; and that some are alternately males and females, and perform the functions of either sex, because the females, being more ardent than the males, often mount upon them, and because the external resemblance is so great, that, unless narrowly examined, the one may easily be mistaken for the other.

The young, when brought forth, have their eyes open. The mother suckles them about twenty days; after which they separate, and procure their own food. They never remove far from each other, nor from the place where they are littered. They live, however, in solitude, each making a form or seat at the distance of sixty or eighty paces. Thus, when we meet with one young hare, we are almost certain of finding two or three others in the neighbourhood. They feed more in the night than in the day; they

they eat herbs, roots, leaves, fruit, grain, and prefer those plants which have milky juices. During winter, they gnaw the bark indiscriminately from all trees, except that of the alder and lime, which they never touch. When reared in houses, they are fed with lettuce and pot-herbs: But the flesh of those fed hares has always a bad taste.

During the day, they sleep or repose in their forms, and are active only in the night, when they move about, feed, and copulate. When the moon shines, they are seen playing together, leaping and chasing each other. The smallest motion, or the noise of a falling leaf, is sufficient to terrify and make them fly different ways.

Some authors maintain, that hares chew the cud. But I cannot assent to this opinion; because they have one stomach only, and its conformation, as well as that of the other intestines, are totally different from those of ruminating animals. The caecum of the latter is small, but that of the hare is very large; and, when to the capacity of the stomach this large caecum is added, it is easy to perceive that the hare, by taking a great quantity of aliment, may live upon herbs alone, like the horse and ass, which have also a large caecum, and but one stomach, and, consequently, are incapable of ruminating.

Hares sleep much, but always with open eyes. They have neither eye-lids nor cilia, and their

eyes seem to be bad. But, as a remuneration, they have an acute sense of hearing, and enormous ears in proportion to the size of their bodies. These long ears they move with great facility, and employ them as a rudder to direct their course, which is so rapid, that they outstrip all other animals. As their fore legs are much shorter than the hind legs, they run more easily up than down hill; hence, when pursued, they always take to the highest grounds. Their running is a kind of gallop, a succession of quick leaps. Their motion is not accompanied with noise; because their feet are covered, both above and below, with hair. They are perhaps the only animals which have hair in the inside of the mouth.

The duration of their life, like that of other animals, is proportioned to the time of their growth, which is completed in one year, and they live about seven. The males are said to live longer than the females. They pass their days in solitude and silence; and their voice is never heard but when seized or wounded: It is a loud, sharp cry, having some resemblance to the human voice. They are not so savage as their manners and habits would indicate: They are gentle, and susceptible of a kind of education. Though easily tamed, and even rendered caressing, they never acquire that attachment which is necessary to make them domestic; for, when taken young, and brought up in the house, they  
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take the first opportunity of regaining their liberty, and of flying to the fields. As they have a fine ear, sit spontaneously on their hind legs, and use the fore legs as a kind of hands, they have been trained to beat a drum, to perform gestures in cadence, &c.

In general, the hare wants neither instinct sufficient for his own preservation, nor sagacity for escaping his enemies. He forms a seat or nest: In winter, he chooses situations exposed to the south, and, in summer, to the north. With a view to deceive, he conceals himself between clods or hillocks of the same colour with that of his own hair. ‘I have seen,’ says Fouilloux, ‘a hare so sagacious, that, after hearing the hunter’s horn, he started from his form, and, though at the distance of a quarter of a league, went to swim in a pool, and lay down on the rushes in the middle of it, without being chased by the dogs. I have seen a hare, after running two hours before the dogs, push another from his seat, and take possession of it. I have seen others swim over two or three ponds, the narrowest of which was eighty paces broad. I have seen others, after a two hours chase, run into a sheep-fold and lie down among the sheep. I have seen others, when hard pushed, run in among a flock of sheep, and would not leave them. I have seen others, after hearing the noise of the hounds, conceal themselves in the earth. I have seen o-



‘thers run up one side of a hedge and return by  
‘the other, when there was nothing else between  
‘them and the dogs. I have seen others, after  
‘running half an hour, mount an old wall, six  
‘feet high, and clap down in a hole covered with  
‘ivy. Lastly, I have seen others swim over a  
‘river of about eighty paces broad, more than  
‘twice, in a length of two hundred paces.’

But these facts unquestionably exhibit the greatest efforts of their instinct ; for their ordinary resources are not so fine nor so complicated : When pursued, they first run with rapidity, and then double, or return upon their former steps. They always run in the direction that the wind blows. The females run not so far from their place of starting as the males ; but they double oftener. In general, hares hunted in the place that gave them birth, never remove to a great distance from it, but return to their form ; and if chased two days successively, they perform, in the second day, the same doublings they had observed the day before. When a hare runs straight out, and to a great distance from the place he started, it is a proof that he is a stranger. It often happens, that male hares, especially during the most remarkable period of rutting which is in the months of January, February and March, when they have few females near them, perform journeys of several leagues in quest of mates ; but, as soon as they are started by the dogs, they fly back to the place of their

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nativity, and never more return. The females wander not in this manner. Though longer than the males, they are weaker and less agile : But they are more timid ; for they never allow the dogs to come so near their seats as the males, and their doublings are more frequent. They are also more delicate, and more susceptible of impressions from the weather. They avoid water and dews. But there are males called *measled hares*, which love marshy and watery grounds. The flesh of these hares is bad tasted ; and, in general, the flesh of all hares which inhabit valleys is whitish and insipid ; but those of elevated or hilly countries, where the wild thyme and other savory herbs abound, are extremely good. It has even been remarked, that those which live in the low woody grounds of the same country, are not near so good as those that inhabit the ridges of hills, or the cultivated fields, and vineyards ; and that the flesh of the female is always more delicate than that of the male.

The nature of the soil has a considerable influence on the hare, as well as upon all other animals. The mountain hares are larger than those of the plains, and likewise of a different colour. The former are browner, and have more white under the neck than the latter, which are almost red. In high mountains, and in northern regions, they become white during winter, and resume their usual colour in the summer. Only a few, and perhaps these are very old, continue

white ; for they all turn more or less white with age. The hares of Italy, Spain, and Barbary, are smaller than those of France and other northern nations. According to Aristotle, they are smaller in Egypt than in Greece.

Hares are equally diffused over all climates. They abound in Sweden, Denmark, Poland, Russia, France, Britain, Germany, Barbary, Egypt, the islands of the Archipelago, and particularly Delos \*, which was called *Lagaia* by the ancient Greeks, because of the number of hares which were found there. Lastly, hares are numerous in Lapland †, where they are white for ten months of the year, and resume their proper colour during the two warm months of summer only. Hence it appears, that every climate is nearly equal to these animals. It has, however, been remarked, that they are less frequent in the East than in Europe, and that they are very rare in South America, though they again make their appearance in Virginia, Canada ‡, in the neighbourhood of Hudson's bay §, and the straits of Magellan. But these North American hares are perhaps a different species from ours ; for travellers inform us, that they are not only much larger, but that their flesh is white, and of

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\* Descript. des Isles de l'Archipel. de Dapper, p. 375.

† Les Oeuvres de Regnard, tom. i. p. 180. Il genio vagante, tom. 2. p. 46. Voyage de la Martiniere, p. 74.

‡ La relation de la Gaspesie, par le P. le Clercq, p. 488. &c.

§ Le Voyage de Robert Lade, tom. 2. p. 317.

a different taste from that of the common kind \*. They add, that the hair of the North American hares never falls off, and that their skins are excellent furs. In excessively hot countries, as Senegal, Gambia, Guiney †, and particularly in the cantons of Fida, Apam, Agra, and some other regions situated under the Torrid Zone, both in Africa and America, as in New Holland, and the Isthmus of Panama, there are animals which have been called *hares* by travellers, but are rather a species of rabbit ‡; for the rabbit is a native of warm climates, and is never found very far to the north; but hares are larger and stronger in proportion to the coldness of the country they inhabit.

This animal, though so much in request for the tables of Europeans, is not relished by the Oriental nations. The flesh of the hare, it is true, as well as that of the hog, was interdicted by the law of Mahomet, and still more anciently by the Jewish law. But it was much esteemed by the Greeks and Romans: *Inter quadrupedes, gloria prima Lepus* §. It must, indeed, be allowed, that not only the flesh, but the blood of this animal, is excellent. The fat contributes nothing to the delicacy of the flesh; for the hare, in his natural state of perfect liberty, is never

\* La suite des voyages de Dampier, tom. 5. p. 167.

† L'Hist. gen. des Voyages, par M. l'Abbé Prevot, tom. 3. p. 235. 296. ‡ Dampier, vol. 4. p. 111. Wafer, tom. 4. p. 224. § Martial.



never fat; but, when fed in the house, he often dies merely by the load of fat he acquires.

The hunting of the hare is the amusement, and not unfrequently the sole occupation of the idle: As it requires little apparatus or expence, and is even useful, it is a diversion universally agreeable. In the mornings and evenings, the hunter watches, at the edges of the wood, the going out or returning of the hares. During the day, he searches for them in their forms. When the air is clear and the sun brilliant, an expert hunter will discover, at a considerable distance, a hare that has been chased, by the fumes which arise from its body. Conducted by this mark, I have seen men, whose eyes were accustomed to this kind of observation, part from their company, and go to the distance of half a league to kill a hare in its seat. Hares allow a very near approach, if they are not advanced upon directly, but by a winding and seemingly inattentive motion. They are more afraid of dogs than of men, and start sooner when they hear or perceive a dog. Though the hares run faster than the dogs; yet, as they never fly straight out, but double about the place where they were started, the greyhounds, who hunt more by the eye than the scent, generally overtake and kill them. In summer, they frequent the fields, the vineyards in autumn, and the woods or coppices in winter; and, in all seasons, they may be raised and chased by hounds. They may also be  
taken



taken by birds of prey. A perpetual war is carried on against them by owls, buzzards, eagles, foxes, wolves, and men. So numerous are their enemies, that they escape by chance only, and are rarely allowed to enjoy the small portion of time allotted them by Nature.

## S U P P L E M E N T.

It is universally known, that hares make forms, and burrow not in the ground, like rabbits. But I have been informed by an able naturalist, M. Hettlinger, superintendant of the Pyrennean mines, that, in the mountains in the neighbourhood of Baigory, the hares often make holes in the clefts of rocks, which is not considered as remarkable\*.

It is likewise well known, that hares do not willingly inhabit places which are frequented by rabbits; but it also appears that rabbits do not multiply in countries where hares are numerous:

‘In Norway,’ says Pontoppidan, ‘rabbits are found only in a few places; but hares are very frequent. Their hair, which is brown and gray during summer, becomes white in winter. *Like cats, they take and eat mice*, and are of a smaller size than those of Denmark †.’

That

\* Letter from M. Hettlinger to M. de Buffon, dated at Baigory, July 16. 1774. † Pontoppidan's Nat. hist. of Norway.

That hares eat mice, is extremely improbable: But it is not the only marvellous or false fact related by the good Bishop of Bergen.

‘The hares of the isle of France,’ remarks M. le Vicomte de Querhoënt, ‘are not larger than French rabbits. Their flesh is white, and they burrow not in the ground. They are very numerous; their hair is smoother than that of our hares; and they have a large black spot on the hind part of the head and neck.’

M. Adanson likewise asserts, that the hares of Senegal are not entirely similar to those of France; that they are somewhat less; that their colour is a mixture between that of the hare and the rabbit; and that their flesh is exquisitely delicate\*.

T H E

\* Voyage au Senegal, par M. Adanson, p. 25.

Plate LXL



*A. Bell sculp.*

WILD RABBIT

hat

## THE RABBIT\*.

**A**S the hare and rabbit, though very similar both in external form and internal structure, never intermix, they constitute two distinct species. However, as it has been maintained by hunters †, that male hares, in the rutting season, pursue and cover female rabbits, I endeavoured to discover what would result from this union. For this purpose, I reared together male rabbits and female hares, and female rabbits and male hares. But nothing was produced from these trials. I only learned from them, that

\* The ears of the common rabbit are almost naked. The colour of the fur, in a wild state, is brown; that of the tail is black above and white beneath. In a domestic state, the colour varies from black to pied and perfectly white; the eyes of the last are of a fine red; *Pennant's Synops. of quad.* p. 251.

In Greek *Δαυπον*; in Latin, *Cuniculus*; in Italian, *Coniglio*; in Spanish, *Conejo*; in Portuguese, *Coelho*; in German, *Ganinchen*; in Swedish, *Kanin*; in old French, *Connin*, *Connil*.

*Lepus* vel *Lepusculus* Hispanicus; *Gesner. Icon. anim. quad.* p. 105.

*Cuniculus*, *Raii Synops. quad.* p. 205. *Plinii lib. 8. c. 55.*

CHAR. GEN. Dentes primores II. superiores duplicati; interioribus minoribus.—CHAR. SPEC. *Lepus cuniculus*, cauda abbreviata, auriculis nudatis; *Linn. Syst. Nat.* p. 251.

*Lepusculus*, *cuniculus* terram fodiens; *Klein. quad. hist. nat.* p. 52.

*Lepus caudatus* pilis tenuissimis et longissimis toto corpore vestitus; *Briffon. quad.* p. 141.

† La Venerie de du Fouilloux, p. 100.



these animals, though very similar in form, are so different in their natures, as to be incapable of producing mules. I put a young hare and a young female rabbit in the same apartment; but they lived not together three months. As soon as they acquired a little strength, they became mortal enemies, and their continual wars terminated in the death of the hare. Of two male hares farther advanced in life, which I confined separately with a female rabbit, one suffered the same fate; and the other, which was very strong, and very ardent, perpetually tormented the rabbit with attempts to cover her, and at last killed her by wounds, or by too violent careffes. I made similar trials with three or four male rabbits, and an equal number of female hares; but the latter died in a still shorter time. Though nothing was produced, I am inclined to think that they sometimes actually coupled. It is certain, at least, that, notwithstanding the resistance of the female, the male was gratified: And it was more reasonable to expect fruit from these mixtures than from that of the rabbit and hen, which, according to a certain author, would produce *chickens covered with hair, or rabbits covered with feathers* \*. This ridiculous conclusion was drawn from a vicious male rabbit, which, having no female, used a hen in the same manner as he would any other moveable. It was extremely improbable, that two species, so remote

\* See l'art d'élever des poulets.

remote from each other, should be fertile, while nothing results from the union of the hare and rabbit, whose species are so very analogous.

The fecundity of the rabbit is still greater than that of the hare. Without believing, with Wotton, that, from a single pair put upon an island, six millions were found at the end of one year, it is certain that these animals multiply so prodigiously in a country which is commodious for them, that the produce of the earth is not sufficient to afford them subsistence. They devour herbs, roots, grain, fruits, and even young trees and shrubs; and, if not furnished with dogs and ferrets, the inhabitants would be obliged to desert these countries. The rabbit not only produces more frequently, and in greater number than the hare, but has likewise more resources for escaping his enemies. He easily abstracts himself from the observation of man. The holes which he digs in the earth, where he retires during the day, and impregnates his mate, protect him from the ravages of the wolf, the fox, and birds of prey. Here the whole family live in perfect security. The females nourish their young about two months, and never allow them to go out of their retreat till they are able to shift for themselves. By this means, they avoid all the dangers of youth; while more hares, on the contrary, are destroyed during this period than in all the after part of their lives.

This

This management is alone sufficient to prove that the rabbit is superior in sagacity to the hare. The structure of both is the same, and might enable them equally to dig retreats in the earth. Both are equally timid; but the talents of the one being weaker than those of the other, he contents himself with forming a seat on the surface of the ground, where he remains perpetually exposed; while the rabbit, endowed with a superior instinct, digs for himself an asylum in the earth. This labour is unquestionably the effect of sentiment; for domestic rabbits never give themselves the trouble of digging. They dispense with digging retreats, for the same reason that domestic birds dispense with building nests, because they are equally sheltered from the inconveniencies and dangers to which wild birds and wild rabbits are continually liable. It has often been remarked, that, when a warren is attempted to be replenished with domestic rabbits, both they and their offspring remain, like the hares, upon the surface; and that they never begin to dig holes for their protection, till after they have endured many hardships, and passed through several generations.

The colours of the domestic rabbit vary, like those of all other domestic animals; for we have white, black, brown, and spotted rabbits. The black rabbits are rarer than the white, brown, or variegated kinds. All wild rabbits are brown; and, even among the domestic ones, it is still the  
pre-

predominant colour ; for, in every litter, though both male and female be white, or both black, or the one white and the other black, some of the young are always brown. It is seldom that above two or three resemble the parents. But the brown rabbits, though in a domestic state, generally produce young of their own colour only ; and it is very rare, and as by accident, that they bring forth white, black, or mixed kinds.

At the age of five or six months, these animals are capable of procreating. They are said to be constant in their amours ; and, after attaching themselves to a particular female, generally never quit her. The female is almost perpetually in a condition for receiving the male. She goes with young thirty or thirty-one days, and produces from four to eight at a litter. Like the female hare, she has a double uterus, and consequently may bring forth at two different times. Superfoetations, however, seem to be less frequent in this species than in that of the hare. This circumstance may, perhaps, be owing to the constancy of the females, and to their indulging in fewer adventures and unseasonable embraces.

Some days before bringing forth, they dig a new hole, not in a straight line, but angular ; at the bottom of which they make an excavation ; and they pull great quantities of hair off their bellies, and make a bed of it for the reception of their young. During the two first days, they never

never leave their offspring: They never go out but when pressed with hunger, and return as soon as they have filled their stomach, which they do with surprising quickness. In this manner they tend and suckle their young for more than six weeks, during which the father has no knowledge of them. He never enters the hole dug by the mother; and the female, when she leaves her young, frequently shuts up the mouth of the hole with earth diluted in her own urine. But, when they begin to come to the mouth of the hole, and to eat groundsel, or other herbs, presented to them by the mother, the father seems to know them: He takes them between his paws, smooths their hair, and licks their eyes, Each of them, one after another, equally partakes of his care and attention. He receives, at the same time, many caresses from the mother; and, in a few days afterwards, she is generally impregnated.

I received the following remarks from M. le Chapt du Moutier, who has amused himself for several years in rearing rabbits: ‘I began,’ says he, ‘with only one male and one female. The male was perfectly white, and the female brown. In their posterity, which was very numerous, the brown greatly predominated; there was a considerable number of them white and mixed, and some black. When the female is in season, the male seldom quits her. His constitution is so vigorous and ardent, that I have

‘seen



‘ seen him embrace the female five or six times  
‘ in less than an hour. In the time of coition,  
‘ the female lies flat on her belly, with her four  
‘ paws stretched out; and she utters small cries,  
‘ which rather indicate pleasure than pain. Their  
‘ manner of coupling resembles that of the cats,  
‘ with this difference, that the male bites the  
‘ neck of the female with less violence. These  
‘ animals pay much respect to their fathers,  
‘ which I discovered by the great deference my  
‘ rabbits entertained for their original father, who  
‘ was easily distinguished by his whiteness, being  
‘ the only male of this colour which I preserved.  
‘ The family soon increased: But those who had  
‘ likewise become fathers, were always subordi-  
‘ nate to their first sire. Whenever they fought,  
‘ either for females or food, the grandfather ran  
‘ up to them with full speed; and, as soon as they  
‘ perceived him, order was re-established. If  
‘ he surprised them in the act, he first separated  
‘ the combatants, and then gave them an exem-  
‘ plary punishment. I had still a farther proof  
‘ of his dominion over his posterity. Having  
‘ accustomed them to retire into their apartment  
‘ upon the blowing of a whistle, when I gave  
‘ the signal, however distant they might be, the  
‘ grandfather put himself at their head, and,  
‘ though he arrived first, he allowed them all to  
‘ pass before, and entered last himself. I fed  
‘ them with bran, hay, and a good deal of juni-  
VOL. IV. L per;

‘per; of this last they eat the berries, the leaves,  
 ‘the bark, and leave nothing but the wood.  
 ‘This food gave a fine flavour to their flesh,  
 ‘and made it equally good as that of the wild  
 ‘rabbit.’

These animals live eight or nine years. As they pass the greatest part of their lives in holes, where they enjoy perfect tranquillity, they grow much fatter than hares. Their flesh differs likewise both in colour and taste. The flesh of the young rabbit is very delicate; but that of the old is dry and hard. As I formerly remarked, they are originally natives of warm climates. They were known to the Greeks\*; Greece and Spain† seem to be the only places in Europe where they anciently existed. From thence they were transported into more temperate regions, as Italy, France, Germany, Britain, where they are now naturalized. But, in very cold countries, as Sweden‡, and other parts of the north, they cannot be reared in houses, and they perish when abandoned to the fields. But, on the contrary, they are fond of excessive heat; for we find them in the most southern parts of Asia and Africa, as along the Persian Gulf||, the bay of Sal-

\* Arist. Hist. animal. lib. 1. cap. 1.

† Plin. Hist. Nat. lib. 8.

‡ Linnæi Faun. Suec. p. 8.

|| L'Hist. gen. des Voyages, par M. l'Abbé Prevôt, tom. 2.

Plate LXII.



*A. Bell Sculp.*

HARE







Plate LXIII



DOMESTIC RABBIT

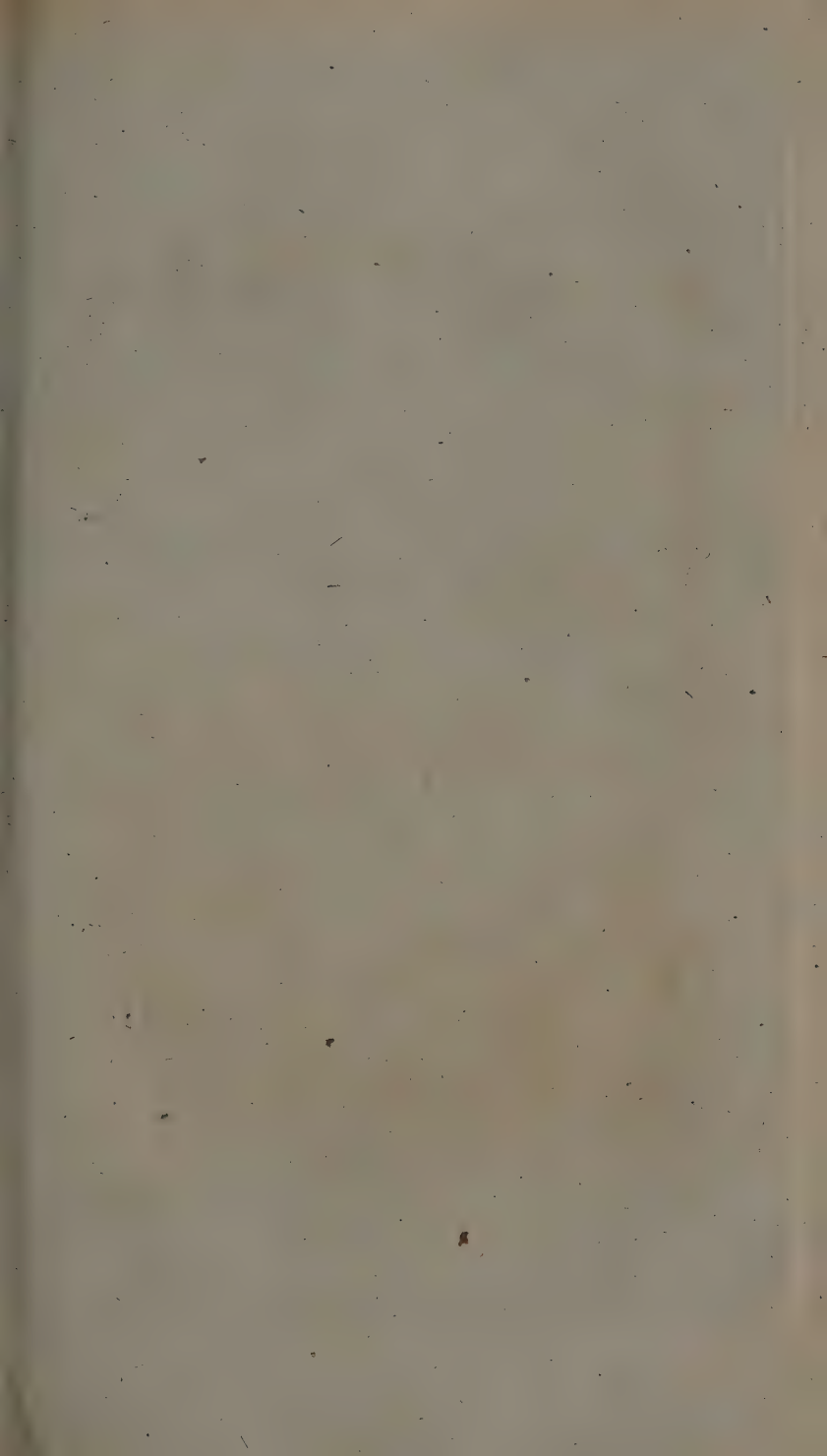
Plate LXIV.



*A. Bell Sculp.*

SILVER HAIRD RABBIT









Saldana \*, in Lybia, Senegal, and Guiney †. They are likewise found in our American islands ‡, where they have been brought from Europe, and have succeeded extremely well.

## L 2 OF

\* L'Hist. gen. des Voyages, par M. l'Abbé Prevôt, tom. 2. p. 449.

† Leon. Afric. de Afric. descript. part 2. p. 257. Le Voyage de Guill. Bosman, p. 252.

‡ L'Hist. gen. des Antilles, par le P. du Tertre, tom. 2. p. 297.

## CARNIVOROUS ANIMALS.

**H**ITHERTO we have treated of useful animals only. The noxious species are few in number ; and though, upon the whole, what is hurtful seems to abound more than what is serviceable, yet every thing is well ordered ; for, in the physical world, evil is subservient to good, and there is nothing really noxious in Nature. If the destruction of animals be hurtful, is not man, considered as forming a part of the general system of animation, the most noxious and pernicious of all beings ? He alone sacrifices and annihilates more individuals than the whole carnivorous tribes. The latter are hurtful only, because they are rivals to man, because they have the same appetites, the same taste for animal food, and because, in obedience to this unavoidable and necessary desire, they sometimes dispute with him that prey which he would engross for the gratification of his inordinate appetite ; for man always sacrifices more to his intemperance than to his real wants. Born to destroy the subordinate races of animals, he would exhaust all Nature, if, by a fecundity superior to his depredations, she did not repair the

perpetual

perpetual havock he makes. But death is only the minister of life, and destruction is the parent of reproduction. However great, therefore, the waste made by man and the carnivorous animals, the fund or total quantity of life is never diminished ; for, in proportion to their premature destruction, fresh births are produced.

Large animals constitute but a small part of life: The earth teems with the smaller tribes. Every plant, every grain, every particle of organized matter, contains millions of animated atoms. Vegetables seem to be the great fund of subsistence ; but this fund, however inexhaustible, would hardly be sufficient to the still more numerous tribes of insects. Their fecundity, which is equally great, and often quicker than the reproduction of plants, indicates the superiority of their numbers: For plants are only renewed every year ; but a single season gives birth to several generations of insects, especially among the minuter tribes. Their multiplication, therefore, if they were not devoured by other animals, would exceed that of vegetables. But many insects feed upon other insects: Some tribes, as the spiders, devour indifferently their own as well as many other species ; the whole are eaten by the birds ; and the wild and domestic fowls serve as nourishment to man, or become the prey of carnivorous animals. Thus violent deaths are equally necessary as natural ones: They are both modes of destruction and

of reproduction ; the one continues Nature in perpetual youth, and the other preserves the order of her productions, and limits the number of species. Both are effects depending upon general causes : Every individual drops at the end of a determined period ; or, if prematurely cut off, it was because he was superfluous. How many flowers are cropped in the spring ? What numberless beings are extinguished the moment they begin to exist ? How many germs are annihilated before they are unfolded ? Man and the carnivorous animals feed upon individuals either completely formed, or about to exist. Flesh, eggs, seeds, and germs of every species, constitute their ordinary nourishment. This waste alone might limit the exuberance of Nature. Let us attend to one of those inferior species that serve for nourishment to others. The herrings, for example, present themselves in myriads to our fishers ; and, after feeding all the monsters of the northern ocean, they furnish subsistence to Europe during a certain part of the year. If incredible numbers of them were not devoured by other animals, what would be the effects of such an amazing multiplication ? They alone would cover the whole surface of the sea. But, by their numbers, they would soon injure and destroy each other. For want of sufficient nourishment, their fecundity would diminish. Contagion and famine would produce the same effects as the present consumption ; the number of

of these animals would by no means increase; but the number of those that feed upon them would greatly diminish. And, as the same remark may be applied to any other species, they must of necessity prey upon one another. Hence the killing of animals is both a lawful and an innocent practice, because it is founded in nature, and they hold their existence under that seemingly hard condition.

It must be allowed, however, that the motives which have raised doubts concerning this matter, do honour to humanity. Animals, at least those who are endowed with senses, and are composed of flesh and blood, are sensitive beings: Like us, they are capable of pleasure, and subject to pain. To sacrifice unnecessarily those animals who approach or live with us, and who, like man, exhibit symptoms of pain when injured, indicates a cruel insensibility; for those whose nature differs greatly from ours, cannot affect us. Natural pity is founded on the analogy which takes place between us and the object that suffers, and the degree of it is proportioned to the nearness of this conformity or resemblance in structure. The word *compassion* implies a division of suffering. In man the sentiment of pity belongs more to the body than to the mind; and the animals are also susceptible of it. They are moved by the voice of pain; they run to succour each other; they recoil at the view of a dead body of their own species. Thus horror and pity are not  
fo



so much passions of the mind, as natural affections depending on the sensibility of the body, and similarity of structure. This emotion, therefore, ought to diminish in proportion as different animals recede from each other in their nature and conformation. The beating of a dog, or the killing of a lamb, excite our compassion: But we feel no emotion when a tree is felled or an oyster swallowed.

Animals, whose organization resembles that of man, must have similar sensations; and the liveliness of these sensations must be proportioned to the activity and perfection of their senses. Those, on the other hand, whose senses are blunt, cannot have exquisite feelings; and those who are deprived of any organ of sense, must likewise want the correspondent sensations. Motion is a necessary effect of the exercise of sentiment. We formerly proved \*, that, whatever be the organization of an animal, if it be endowed with sentiment, it must exhibit its feelings by external movements. Thus plants, though properly organized, are insensible beings, as well as those animals who have no apparent motion. In the same manner, animals, who, like the sensitive plant, move their bodies only, but are deprived of progressive motion, have very little sentiment; and even those who are endowed with the power of moving progressively, but whose actions, like those of automats, are extremely

\* See above, discourse on the nature of animals.

tremely limited in number, and always performed in the same manner, have only a small portion of sentiment, which is confined to a few objects. In the human species, there are many automats: Education, and the mutual communication of ideas, by means of social intercourse, augment both the quantity and the vivacity of our sentiments. What a vast difference, in this respect, between a savage and a civilized man, between a female Hottentot and a woman of fashion? Among the animals, in like manner, those who live in a domestic state have their feelings improved by their frequent intercourse with man; while those who remain wild preserve only their natural sensibility, which is often more certain, but always more confined than that which is acquired by education and example.

Besides, considering sentiment entirely as a natural faculty, independent of the movements produced by it, we may still ascertain its different degrees by physical relations, to which too little attention has hitherto been given. To possess a high degree of sensibility, the animated body must form a whole, not only sensible in all its parts, but so constructed that these parts intimately correspond with each other, in such a manner, that an impression made upon one, must necessarily be communicated to all the rest. There must also be a common centre, upon which the various impressions or vibrations must terminate, and this centre must, like a fulcrum,  
re-act,

re-act and reflect all these movements, Thus man, and those animals who resemble him most in organization, will be the most sensible beings. Those, on the contrary, who form not so complete a whole, whose parts have a less intimate correspondence, who have several centres of feeling, and who, under the same covering, seem not to include one perfect animal, but various centres of existence separate from each other, are beings of much less sensibility. When a polypus is cut in pieces, each division lives separately; the head of a wasp, after being divided from the body, lives, moves, and even eats as formerly; a lizard, though cut asunder, is neither deprived of motion nor of feeling; the limbs of a lobster are renewed after amputation; the heart of a turtle continues to beat long after it is cut out of the body; the principal viscera of insects, as the heart and lungs, make not a whole in the centre of these animals, but extend along the body, and form a succession of unconnected hearts and wind-pipes: All these, and similar animals, whose organization is so far removed from that of man, have little sentiment.

In man, and in the animals which resemble him, the diaphragm appears to be the centre of sentiment: It is upon this nervous part, which conveys the impressions of pain and of pleasure, that all the movements of the sensible system are exerted. The diaphragm makes a transverse division of the body into two equal parts, the superior

rior of which includes the heart and lungs, and the inferior contains the stomach and intestines. This membrane is endowed with such an extreme sensibility, and is so necessary to the communication and propagation of feeling, that the slightest wound, whether in its centre or circumference, is always accompanied with convulsions, and often with death. The brain, therefore, which has been considered as the seat of sensation, is by no means the centre of sentiment; for it may be wounded, and even parts of it cut away, without destroying the animal.

Sensation, therefore, ought to be distinguished from sentiment. Sensation is only a vibration, or impression on the sense; but sentiment is the same sensation rendered agreeable or disagreeable by the propagation of the vibration through the system. The essential characteristic of sentiment is pleasure or pain; for all other movements, though they pass within us, are totally indifferent, and do not effect us. All the external motions, and the exercise of every animal force, depend on sentiment, which only acts in proportion as it is affected. The diaphragm, therefore, which we consider as the centre of sentiment, is also the centre of force, or common fulcrum upon which every force is exerted.

All lively emotions, whether pleasant or painful, sickness, fainting, and every sensation that has become agreeable or disagreeable, are felt internally in the region of the diaphragm. In the



the brain, on the contrary, there is no indication of sentiment. We feel only pure sensations in the head. We can, indeed, recal any sensation, whether agreeable or disagreeable; and, if this operation, which is performed in the head, be followed by a real and lively sentiment, we immediately feel the impression of it in the region of the diaphragm. Thus, in the foetus, where this membrane is not exercised, there is no sentiment, or at least it is so feeble as to produce no effect; for the little motions of a foetus are mechanical, and have no dependence either on sensation or on the will.

Whatever be the nature of that matter, which serves as a vehicle to sentiment, and gives rise to muscular motion, we know that it is propagated by the nerves, and that it is instantaneously communicated from one extremity of the system to the other. We know not how this movement is performed, whether by vibrations like those of elastic cords, or by a subtile fire similar to that of electricity, which resides not only in animated and inanimated bodies, but is perpetually regenerated by the motion of the heart and lungs, by the friction of the blood in the arteries, and also by the action of external causes upon the organs of sense. It is certain, however, that the nerves and membranes are the only sensible parts of an animal body. The blood, the lymph, the fat, the bones, the flesh, and all the other solids and fluids are, in themselves,



selves, totally insensible. The brain is a soft unelastic substance, and, of course, incapable of producing or of propagating the vibrations of sentiment. The meninges, on the contrary, which serve as an envelope or covering to all the nerves, are exceedingly sensible. Like the nerves, the meninges originate in the head, and, like them, they divide into branches, and extend along with their most minute ramifications. They may be regarded as nerves rendered flat; for they are of the same substance, have nearly the same degree of elasticity, and form a necessary part of the sensible system. If the head, therefore, be the seat of sensation, it must reside in the meninges, and not in the medullary part of the brain, the substance of which is entirely different.

The opinion, that the brain is the fountain of sensation, and the centre of all sensibility, arose from this circumstance, that the whole nerves, which are the organs of sensation, terminate in the brain; and hence it was regarded as the only part fitted to receive every impression or vibration. This supposition appeared so simple and so natural, that the physical impossibility which it implies, though abundantly evident, was never attended to: How can an insensible part, a soft inactive substance, such as the brain, be itself the instrument of all sensation and motion? How can this soft insensible substance not only receive impressions, but retain them for a long time,

time, and propagate vibrations through all the solid and sensible parts of the body? It may, perhaps, be replied, with Descartes and Peyronie, that the principle of sensation resides not in the brain, but in the pineal gland, or in the cortical substance. But, from examining the parts of the brain, it is apparent, that neither the pineal gland nor cortical substance contain nerves: They are surrounded with the insensible part of the brain, and so separated from the nerves, that they can receive none of their movements. Hence these suppositions, as well as the former, fall to the ground.

But what is the use, what are the functions of this noble and principal part of the body? Is not the brain found in every animal? Is it not larger in man, in the quadrupeds, and in the birds, who have all a great deal of sentiment, than in fishes, insects, and other animals which have little sentiment? When compressed, is not all motion suspended? If this part is not the principle of action, why is it so essentially necessary? Why is it even proportioned, in every species of animals, to the quantity of sentiment they possess?

These questions, however difficult they may appear, admit of easy solutions. Upon an attentive and unprejudiced examination, the brain, as well as the medulla oblongata, and spinal marrow, which is a prolongation of the brain, are only a species of mucilage, and hardly organized.

nized. We discover in it, indeed, the extremities of small arteries, which terminate there in vast numbers, and carry no blood, but a white nutritious lymph only. These minute arteries, or lymphatic vessels, when separated from the brain by maceration, appear like very fine threads. The nerves, on the contrary, never penetrate the substance of the brain, but terminate on its surface ; but they first lose their solidity and elasticity ; and their extremities next the brain are soft, and almost mucilaginous. Hence the brain, which is nourished by the lymphatic arteries, furnishes, in its turn, nutriment to the nerves, which ought to be considered as a species of vegetation issuing from the brain in trunks and branches, which afterwards divide into an infinite number of ramifications. The brain is to the nerves, what the soil is to plants : The extremities of the nerves are the roots which, in every vegetable, are more tender and soft than the trunk or branches. They contain a ductile matter proper for the growth and nourishment of the nervous tree. This ductile matter they derive from the substance of the brain itself, to which the arteries perpetually carry the necessary supplies of lymph. The brain, therefore, instead of being the origin of sensation, or the principle of sentiment, is only an organ of secretion and nutrition, but a very essential organ ; for, without it, the nerves would neither grow nor be supported.

The

The brain is largest in man, quadrupeds, and birds ; because the quantity of nerves is greater than in the fishes and insects, whose sentiment, for this reason, is feeble : The latter have a small brain, proportioned to the small quantity of nerves it has to nourish. On this occasion, I must remark, that man's brain, as has been alleged, is not proportionally larger than that of any other animal : There are species of monkeys and of the cetaceous tribes which have larger brains, in proportion to the size of their bodies, than man : And this fact likewise proves, that the brain is neither the seat of sensation, nor the principle of sentiment ; for, if this were the case, these animals would have finer sensations and more sentiment than the human species.

Plants absorb not the solid parts of earth or water : These parts must be reduced by heat into thin vapours, before they can be absorbed by the roots. In the same manner, the nerves are nourished by the subtile moisture of the brain, which is absorbed by their extremities or roots, and from thence conveyed to all the branches of the sensitive system. This system, as formerly remarked, forms a whole, all the parts of which have such an intimate connection, that none of them can be injured without wounding the rest. The slightest irritation of a small nerve, is sufficient to convulse the whole body ; and the pain and consequent convulsions cannot be cured but by cutting the nerve  
above



above the injured part ; and then all the parts upon which this nerve was distributed, become for ever immoveable and insensible. The brain ought not to be regarded as an organic portion of the nervous system ; because it has not the same properties, nor consists of the same substance, being neither solid, nor elastic, nor sensible. I acknowledge, that, when compressed, sensation ceases. But this alone proves it to be a body foreign to the nervous system, which, acting by its gravity on the extremities of the nerves, presses and benumbs them, in the same manner as a weight applied to the arm, leg, or any other part of the body, benumbs the nerves, and annihilates their sensation. It is true, this cessation of feeling, by compression, is only a suspension or a benumbing, which vanishes the moment the compression is removed, and sensation and motion are again renewed. I farther acknowledge, that, by tearing the medullary substance of the brain, convulsions, privation of feeling, and death itself, will ensue. But these effects are produced, because the nerves are entirely deranged, and the whole of them materially injured in their very source.

To these arguments particular facts might be added, which would equally show that the brain is neither the centre of sentiment, nor the seat of sensation. We have seen animals, and even children, born without head or brain, and yet they had sentiment, motion, and life. There are whole classes of animals, as insects and worms,



in whom the brain is not perceptible, having only a part corresponding to the medulla oblongata and spinal marrow. It is, therefore, more rational to place the seat of sensation in the spinal marrow, which no animal wants, than in the brain, which is not an universal part, common to all sensitive beings.

The great obstacle to the advancement of human knowledge, lies not in the objects themselves, but in our manner of considering them. Man's body, however complicated, is more simple than his ideas. It is less difficult to see Nature as she is, than to know her in the dress she is exhibited to us. She only wears a veil ; but we give her a mask. We conceal her with prejudices. We suppose that she operates as we act and think. Her actions, however, are evident ; but our thoughts are obscure. To her operations we transfer the abstractions of our own minds. We judge of her designs by our own views ; and we perpetually blend her works which are uniform, her facts which are always certain, with the fluctuating illusions of our own imagination.

I speak not here of systems purely arbitrary, or of frivolous and imaginary hypotheses, but of the methods generally employed in the investigation of Nature. Even the method of experiment has produced more errors than truths. This method, though the most certain, requires great dexterity of management : A small deviation either leads

to barren regions, or to rare and obscure objects. We nevertheless assemble them together, and ascribe to them general relations and common properties; and, as mankind pass and repass on the crooked paths which have been formed, the road appears to be clear and beaten. Though it terminates in nothing, the whole world follows, the method is adopted, and the consequences derived from it are received as fixed principles. I might demonstrate this doctrine by exposing the origin of what are called *principles* in all the sciences, both abstract and real: In the former, the general basis of the principle is abstraction, or one or two suppositions: In the latter, the principles are only consequences, good or bad, of the methods which have been observed. I shall here limit myself to the science of anatomy: Did not the first man who, contrary to a repugnance of Nature, opened a human body, believe that, by dissecting and examining its different parts, he would soon discover its structure, mechanism, and functions? But, having found the subject to be infinitely more complicated than he imagined, he was soon obliged to renounce his pretensions, and to institute a method, not for distinguishing and judging, but solely in order that he might see the parts in a certain train or order. Many ages were necessary to bring this method to any degree of perfection; and it alone still occupies the attention of our most accomplished anatomists. This method, however, is not the science, but only the

road which ought to lead to it, and which perhaps might have led to it, if, instead of travelling always in the same narrow path, anatomists had extended the tract, and compared the human body with that of the other animals. What real knowledge can be deprived from a single object? Is not every science founded on the comparison of similar and different objects, of their analogous or opposite properties, and of all their relative qualities? Absolute knowledge, if it has an existence, exceeds the powers of man: We can judge only by the relations of things. When solely occupied with the method of investigating a subject, and when we consider it independent of what is analogous, or different from it, we can never arrive at real knowledge, and far less rise to any general principle: In this case, we can invent names only, and make descriptions of the object, and of all its parts. Thus, though human bodies have been dissected for three thousand years, anatomy is still nothing but a nomenclature; and hardly any advances have been made toward the real object, which is the knowledge of the animal oeconomy. Besides, the method itself is still imperfect, though it ought to be clear and simple, since it depends on inspection, and has no end but that of denominations? As this nominal knowledge has been mistaken for science, anatomists, instead of limiting the number of objects, have been anxious to augment the number

of names. They have loaded the subject with minute and fruitless details. They were inclined to discover differences, where every thing was alike. In creating new names, they imagined they were exhibiting new objects; and the description of a minute part, which had been either overlooked or neglected by former anatomists, was dignified with the appellation of a *discovery*. Even the names themselves being frequently substituted in place of the objects, with which they have no relation, have only served to augment the confusion. Are not the *nates* and *testes* small parts of the brain similar to the whole, and unworthy to be distinguished by particular denominations? These names, bestowed originally from caprice, at last gave rise to new opinions and prejudices. Others, given to parts which either did not exist, or were imperfectly viewed, have been the sources of fresh errors. How many functions and uses have been ascribed to the pineal gland, and that pretended void in the brain, called the *fornix*, while the former is only a simple gland, and the existence of the latter is doubtful, being probably produced by the hand of the dissector \*?

The most difficult part of science, therefore, is not to know those things which form the direct object of it, but to strip them of a thousand false colours under which they have been concealed, to examine the foundation and effects



of the method employed by former inquirers, to reject every arbitrary arrangement, and, in fine, to endeavour to detect every error or prejudice that has been adopted. All these precautions are necessary to uncover Nature; but, to know her, we have only to compare her with herself. In the animal oeconomy, her appearance is very mysterious, not only because the subject is complex, but because, having neglected those modes of comparison which alone could afford light, we have been left to wander in the darkness of vague hypotheses. The human body has been described in millions of volumes; while the anatomy of the other animals has been almost entirely neglected. In the human subject, we have distinguished, named, and described the most minute parts; while we are ignorant whether these, or even parts of greater magnitude and importance, exist in other animals. Particular functions have been ascribed to particular organs, without knowing whether the same functions are not performed in other beings, though deprived of these organs. So that, in the different explications of the animal oeconomy, we labour under the double disadvantage of having commenced with the most complicated subject, and of reasoning concerning this subject without the aid of analogy.

In the course of this work, we have observed a very different method. Uniformly comparing Nature with herself, we have traced her in her relations,



relations, in her differences, and in her extremes. To mention here only those parts relative to the animal oeconomy, of which we have had occasion to treat, as the generation, the senses, the movements, the sentiment, and the nature of animals, the reader will easily perceive, that, after all the labour bestowed in discarding false ideas, in rooting out established prejudices, and in separating truth from arbitrary conceits, the only art we have employed is that of comparison. If we have succeeded in throwing light upon these subjects, it must be ascribed not so much to ingenuity or labour, as to the method we have followed, and which we have endeavoured to render as general as our knowledge would permit. Before giving general ideas, we have invariably exhibited the particular results, or effects.

We shall now content ourselves with relating a few facts, which will be sufficient to prove that man, in the state of nature, was never destined to live upon herbs, grain, or fruits; but that, in every period of his existence, he, as well as most other animals, eagerly desired to nourish himself with flesh.

The Pythagorean diet, though extolled by ancient and modern philosophers, and even recommended by certain physicians, was never indicated by Nature. In the golden age, man was innocent as the dove; his food was acorns, and his beverage pure water from the fountain:

Finding

Finding every where abundant subsistence, he felt no anxieties, but lived independent, and always in peace both with himself and the other animals. But he no sooner forgot his native dignity, and sacrificed his liberty to the bonds of society, than war and the iron age succeeded that of gold and of peace. Cruelty, and an insatiable appetite for flesh and blood, were the first fruits of a depraved nature, the corruption of which was completed by the invention of manners and of arts.

These are the reproaches which, in all periods, have been thrown upon man, in a state of society, by certain austere and savage philosophers: Flattering their private pride, by the humiliation of the whole species, they have exhibited this unnatural picture, which has no value but in the contrast: To hold out to man chimerical ideas of happiness, may, perhaps, be sometimes useful.

Did this state of ideal innocence, of exalted temperance, of entire abstinence from flesh, of perfect tranquility, of profound peace, ever exist? Is it not a fable, where man has been employed as an animal, to give us lessons of moral instruction? Is it even possible to conceive the existence of virtue previous to society? Does the loss of this savage state merit regret? Was man, while a wild, unsocial animal, more dignified than the polished citizen? Yes; for every evil springs from society; and what does it import whether

whether there was virtue in a state of nature, if it gave rise to happiness, if man were only less miserable than in his present condition? Liberty, health, strength, are not these preferable to effeminacy, sensuality, and voluptuousness, accompanied with slavery? The absence of pain is more estimable than a thousand pleasures: What is happiness, but to have nothing to desire?

If this representation were just, they should go farther, and tell us, that it is better to vegetate than to live, to have no desires than to gratify our appetites, to doze perpetually in apathetic slumbers, than to open our eyes to view the beauties of Nature, and, in a word, to sink below the condition of brutes, or to become masses of inanimate matter attached to the earth, than to be active and sentient beings, capable of receiving pleasure from a thousand sources.

But, instead of disputing, let us attend to facts: We see not the ideal, but the real state of nature. Is the savage inhabitant of the desert a tranquil being? Is he a happy man? For we must not suppose, with a certain philosopher \*, that the distance from man, in a pure state of nature, to the savage, is greater than from the savage to us; that the ages elapsed before the invention of words, have been longer than those which were necessary for the perfecting of signs and of language. I have always thought, that, in reason-

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\* Rousseau.

ing concerning facts, all suppositions ought to be banished, till every thing presented by Nature be candidly examined. Now, we find that mankind descend, by imperceptible degrees, from the most enlightened and polished nations, to people of less genius and industry; from the latter, to others more gross, but still subject to Kings and to laws; from these, again, to savages, who exhibit as many different shades as the polished nations. Some savages form numerous nations subject to chiefs; smaller societies of them are governed by customs; and the most solitary and independent species constitute families, and submit to their fathers. Thus an empire and a monarch, a family and a father, are the two extremes of society. These extremes are likewise the boundaries of Nature: If they extended farther, in traversing the numberless solitudes of the globe, we must have discovered those human animals, who, like the monkeys, are deprived of speech, the males separated from the females, their offspring abandoned to the elements, &c. Even supposing the constitution of the human body to be very different from what we see it, and that its growth were more rapid, it is impossible to maintain that man ever existed without forming families; because, if not cherished and attended for several years, the whole children must have inevitably perished. Whereas, other animals require the care of the mother a few months only. This physical necessity is a perfect demon-



demonstration, that the human species could neither multiply nor exist independent of society; and that the attachment of parents to children is natural. This attachment must unite the parents and children into a small society, which alone would be sufficient to accustom them to make certain gestures, to utter certain sounds, and inure them to every expression of sentiment and of desire. All this is attested by facts; for the most solitary savages have, like other men, the use of signs and of words.

Thus the state of pure nature is a known state: It is that of the savage living in the desert, but living in family, knowing his children, and being known by them, using words, and making himself understood. The savage girl picked up in the woods of Champagne, and the man found in the forests of Hanover, are not exceptions to this doctrine. They had lived in absolute solitude; and could not, therefore, have any idea of society, or of the use of words: But, if they had ever met, the propensity of Nature would have constrained, and pleasure united them. Attached to each other, they would soon have made themselves understood; they would have first learned the language of love, and then that of tenderness for their offspring. Besides, these savages must have sprung from men in society, and been left in the woods at the age of four or five years; for, before this period, they could not have existed. They must have been old enough



nough to be able to procure subsistence, but not to retain the ideas which had been communicated to them.

Let us, then, examine this man of Nature, this savage living in the family state. If the family prospers, he will soon become the chief of a numerous society, of which all the members will have the same manners, observe the same customs, and speak the same language. At the third or fourth generation, new families will arise, who may live separately ; but, being united by the common bonds of customs and language, they will form a small nation, which, increasing with time, may, according to circumstances, either become one people, or remain in a state similar to that of those savage nations with which we are acquainted. If these new men live under a mild climate, and upon a fertile soil, they may occupy, in the full possession of liberty, a considerable space, beyond which, if they meet with nothing but deserts, or men equally new with themselves, they will remain savage, and become, according to circumstances, either friends or enemies, to their neighbours. But, when under a severe climate, or ungrateful soil, they find themselves pinched by numbers, or cramped for want of room, they will make irruptions, form colonies, and blend themselves with other nations, of which they will either become the conquerors or the slaves. Thus man, in every situation, and under every climate, tends  
equally

equally toward society. It is the uniform effect of a necessary cause; for, without this natural tendency, the propagation of the species, and, of course, the existence of mankind, would soon cease.

Having discussed the origin of society, and shown that it is founded on Nature, let us next inquire what are the appetites and taste of savages. In this investigation, we shall find, that none of them live solely on fruits, herbs, or grain; that they all prefer flesh and fish to other aliments; that pure water is not pleasant to them; and that they endeavour either to make for themselves, or to procure from others, a less insipid beverage. The savages of the South drink the water of the date-tree; those of the North swallow large draughts of whale oil; others make fermented liquors; and the whole, without exception, discover a violent passion for ardent spirits. Their industry, dictated by necessity, and excited by their natural appetites, is confined to the making of instruments for hunting and fishing. A bow and arrows, a club, a net, and a canoe, constitute the whole of their arts, and are all destined to procure a species of food corresponding to their taste: And, what corresponds with their taste, must be agreeable to Nature; for, as formerly remarked\*, man would die of inanition, if he took not more substantial food than herbs alone. Having but one sto-

mach

\* See above, vol. 3. article Ox.

mach and short intestines, he could not take a sufficient quantity of such meagre food as would afford him proper nourishment. The same remark is applicable to fruits and grain; for, though corns and other grains have been highly improved by culture, and contain a greater quantity of organic nutritive particles, than any of those which are produced spontaneously by Nature; yet, if men were denied any other food, he would only drag out a feeble and languishing existence.

View those solitary enthusiasts, who abstain from every thing that has had life, who, from motives of sanctity, renounce the gifts of the Creator, fly from society, and shut themselves up within sacred walls, against which Nature continually revolts: Confined in those living tombs, where they contemplate nothing but death, their mortified visages and hollow eyes indicate perpetual efforts to support a languishing, feeble, and useless existence. They take food; but their hunger never abates. Though aided by the fervour of a romantic imagination, they are enabled to resist the effects of this cruel abstinence for a few years only, and may be said rather to die daily than to live.

If man were obliged to abstain totally from flesh, he could not, at least in our climates, either exist or multiply. This diet may, perhaps, be sufferable in southern countries, where the fruits are better concocted, and the plants, roots,  
and

and grains more nourishing. The Brahmans, however, rather form a sect than a people; and their religion, though very ancient, has never extended beyond their own climate.

This religion, founded on metaphysics, is a striking example of the lot of human opinions. By collecting the scattered fragments which remain, it is unquestionable that the sciences have been very anciently cultivated, and perhaps ripened to a degree of perfection beyond what they now are. It has been known, long before the present æra, that all animated beings contained indestructible living particles, which passed from one body to another. This truth, adopted at first by philosophers, and afterwards more generally diffused, would preserve its purity during the enlightened ages only. A revolution of dark periods having succeeded, no more of the living organic particles were remembered than what was sufficient to give rise to the notion, that the living principle of animals constituted an indestructible whole, which separated from the body after death. To this ideal whole they gave the name of *Soul*, which they soon regarded as a being really existing in all animals; and combining with this chimerical being, the real, but disfigured, idea of the passage of living particles, they maintained, that, after death, this soul transmigrated successively and perpetually from one body to another. From this system man was not excepted: They quickly associated  
morality



morality with metaphysics: They hesitated not to hold that this surviving being retained, in all its transmigrations, its former sentiments, affections, and desires. Weak minds trembled. They contemplated with horror the passage of the soul from an agreeable lodging to be an inhabitant of an unclean and loathsome animal. Every new fear engenders a fresh superstition. In killing an animal, they were terrified lest they should murder their mistress or their father. They regarded every brute as their neighbour: And, at last, both from motives of tenderness and of duty, they maintained that they ought to abstain from every thing endowed with life. This is the origin and progress of the most ancient religion of India: An origin which shows, that truth, when committed to the multitude, is soon disfigured; that a philosophical opinion never becomes popular till it has changed its form; but that, by means of this preparation, it may prove the basis of a religion, the stability of which will be proportioned to the universality of the prejudice, and, being founded on truths misunderstood, it must be environed with obscurity, and, of course, it will have an air of mystery, of grandeur, and of incomprehensibility: In fine, that fear, combining with reverence, will make this religion degenerate into superstitious and ridiculous practices, which, however, will take root, and produce rites that at first will be scrupulously observed, but will so  
gradually



gradually alter with time, that even the opinion which gave them birth, can only be traced in false traditions, in proverbs, and in tales puerile and absurd. From hence we may conclude, that every religion founded on human opinions is false and variable ; and that, to promulgate the true religion, which depends not on the fancies of men, and which is constant, unalterable, and will always be the same, is the prerogative of God alone.

But, to return to our subject. An entire abstinence from flesh can have no effect but to enfeeble nature. Man, to preserve himself in proper plight, requires not only the use of this solid nourishment, but even to vary it. To obtain complete vigour, he must choose that species of food which is most agreeable to his constitution ; and, as he cannot preserve himself in a state of activity but by procuring new sensations, he must give his senses their full stretch, and eat a variety of meats, to prevent the disgust arising from an uniformity of nourishment. But he must avoid every excess, which is still more noxious than abstinence.

Those animals which have but one stomach, and short intestines, are obliged, like man, to feed upon flesh. It is an unquestionable fact, that all animals which have more stomachs than one, and long intestines, like the cow, sheep, goat, &c. are herbivorous, and that those which have but

one stomach, and short intestines, like men, dogs, wolves, lions, &c. are carnivorous.

It must not, however, be concluded, that herbivorous animals are under a physical necessity of feeding on herbs alone, though the carnivorous tribes can by no means subsist without flesh. We maintain only, that the former can be sufficiently nourished without the use of flesh; not that they would not have recourse to this food, if Nature had endowed them with talents adapted to the purposes of seizing prey; for we have seen sheep, calves, goats, and horses, eat, with avidity, milk, eggs, and even flesh, when cut down and seasoned with salt, though they had not been previously accustomed to such food. We may, therefore, maintain, that the taste for flesh is an appetite common to all animals, and that it is exerted with more or less vehemence or moderation according to their particular conformation; for this appetite is apparent not only in man and the quadrupeds, but in birds, fishes, insects, and worms; to the last of which, it would appear, all flesh has been ultimately destined by Nature.

Nutrition, in every animal, is performed by organic particles, which, after being separated from the gross mass of aliment, by means of digestion, mingle with the blood, and are assimilated to all the parts of the body: But, independent of this principal effect, which is always proportioned to the quality of food, another effect is produced, which depends on the  
quantity

quantity or bulk of the nourishing substances. The stomach and intestines consist of flexible membranes, which occupy a considerable space within the body. These membranes, to preserve them in a proper state of tension, and to counter-balance the action of the neighbouring organs, require to be always partly filled. If, for want of nourishment, this large space be left entirely void, the membranes, having no internal support, collapse, and adhere to each other, which gives rise to weakness, and all the symptoms of extreme want. Thus the aliments, beside answering the purposes of nutrition, serve as a ballast to the body. Both their presence and their volume are necessary to maintain the equilibrium between the internal parts, which act and react against each other. When a man dies of hunger, it is not so much for want of nourishment, as of a proper poise to the body. Thus animals, and especially the most voracious tribes, when pressed with hunger, are so eager to fill the internal void, that they swallow earth and stones. Clay has been found in the stomach of a wolf; and I have seen swine eat it greedily. Most birds swallow pebbles, &c. This is not the effect of taste, but of necessity; for the most craving want is, not to refresh the blood with new chyle, but to maintain an equilibrium in the action of the great parts of the animal machine.

# T H E      W O L F \*.

**T**HE wolf is one of those animals whose carnivorous appetite is excessively strong. Though he has received from Nature the means of gratifying this taste, though she has bestowed on him arms, craftiness, strength, agility, and every thing necessary for discovering, seizing, conquering, and devouring his prey ; yet he often dies of hunger ; because men have declared war against him, put a price on his head, and forced him to fly to the forests, where he finds only a few species of wild animals, who escape from him by the swiftness of their course, and whom he cannot surprize but by chance, or by a patient, and

\* The wolf is ranked in the same genus with the dog by Linnaeus, and by Mr Pennant ; the latter of whom describes him in the following manner : ‘ WOLF—Dog with a long head, pointed nose, ears erect and sharp, tail long, bushy, and bending down ; teeth large ; colour generally pale brown, tinged with yellow ; sometimes found white, and sometimes black ; taller than a large grey-hound.’

In Greek, *λυκος* ; in Latin, *Lupus* ; in Italian, *Lupo* ; in Spanish, *Lobo* ; in German, *Wolff* ; in Swedish, *Ulf* ; in Polish, *Wilk* ; in French, *Le Loup*.

*Lupus* ; Gesner. *Icon. animal. quad.* p. 79.

*Lupus* ; Ray, *Synops. animal. quad.* p. 173.

*Canis, cauda incurvata* ; Linn. *sys.* 58.

*Canis-ex griseo flavescens* ; Brisson. *quad.* p. 235.

*Lupus vulgaris* ; Klein. *hist. nat. quad.* p. 70.



and often fruitless attendance at those places to which they generally resort. He is naturally clownish and dastardly ; but want makes him ingenious, and necessity gives him courage. When pressed with famine, he braves danger ; he attacks those animals which are under the protection of man, especially such as he can transport with ease, as lambs, small dogs, and kids ; and, when successful in his bloody expeditions, he returns often to the charge, till, being wounded, chased, and maltreated by men and dogs, he retires, during the day, to his den ; but issues forth in the night, traverses the country, roams about the cottages, kills all the animals which have been left without, digs the earth under the doors, enters with a dreadful ferocity, and puts every living creature to death, before he chooses to depart, and carry off his prey. When these inroads happen to be fruitless, he returns to the woods, searches about with avidity, follows the tract of wild beasts, and pursues them in the hope that they may be stopped and seized by some other wolf, and that he may be a partaker of the spoil. In fine, when his hunger is extreme, he loses the idea of fear ; he attacks women and children, and even sometimes darts upon men, till, becoming perfectly furious by excessive exertions, he generally falls a sacrifice to pure rage and distraction.

The wolf, both externally and internally, has so strong a resemblance to the dog, that he seems



to have been formed upon the same model. But he exhibits the same characters under a mask. The figure is similar ; but the result is directly reversed. Their natural dispositions are so opposite, that they are not only incompatible, but repugnant by Nature, and inimical by instinct. A young dog trembles at the first glance of a wolf. The odour of the wolf, though new and unknown, excites such an aversion in the dog, that he flies, and comes quivering to the feet of his master. A mastiff, who knows his own strength, though terrified at the appearance of a wolf, attacks him with courage, endeavours to put him to flight, and exerts every effort to get rid of an odious object. They never meet, but either flight or death is the consequence. When the wolf is strongest, he mangles and devours his prey. The dog, with more generosity, contents himself with victory ; he finds no savory odour in the body of a dead enemy, but abandons him to be food for the ravens, and even to other wolves ; for wolves eat the carcases of each other, and, when one is much wounded, the others follow the blood, and assemble in troops to despatch him.

The dog, even when wild, is not a fierce animal. He is easily tamed, and attaches himself with fidelity to his master. The young wolf may also be tamed ; but he feels no attachments ; Nature in him is too powerful for education : With age, he resumes his ferocious character, and returns,

returns, with the first opportunity, to his savage state. Dogs, even those of the most clownish race, love to associate with other animals, and are naturally disposed to accompany them: It is by instinct alone, and not by education, that they know how to conduct and guard the flocks. The wolf, on the contrary, is an enemy to all society, and keeps no company even with those of his own species. When several wolves appear together, it is not a society of peace, but of war; it is attended with tumult and dreadful prowlings, and indicates an attack upon some large animal, as a stag, an ox, or a formidable mastiff. This military expedition is no sooner finished, than they separate, and each returns in silence to his solitude. There is even little intercourse between the males and females: They feel the mutual attractions of love but once a-year, and never remain long together. The females come in season in winter: Many males follow the same female; and this association is more bloody than the former; for they growl, chafe, fight, and tear one another, and often sacrifice him that is preferred by the female. The female commonly flies a long time, fatigues her admirers, and retires, while they sleep, with the most alert or most favourite male.

The season of love continues only twelve or fifteen days; it commences with the oldest females; the young ones are not so early disposed. The males have no marked period, but are equally

qually ready at all times. They go from female to female, according as they are in a condition to receive the male: They begin with the old females about the end of December, and finish with the young ones in the month of February or beginning of March. The time of gestation is about three months and a half\*; and young whelps are found from the end of April to the month of July. This difference in the time of gestation between the she-wolf, who carries 100 days, and the bitch who carries only 60 days, proves that the wolf and dog differ as much in their constitutions, and particularly in one of the chief functions of the animal oeconomy, as they do in their tempers. Thus, the wolf and dog have never been regarded as the same animal but by the nomenclators of natural history, who being acquainted with the surface of Nature only, never extend their views beyond their own methods, which are always deceitful, and often erroneous, even in the most obvious facts. The dog and wolf cannot copulate, or produce an intermediate race†. Their dispositions are opposite, and their constitutions different. The wolf lives much longer than the dog; the former brings forth but once a-year, and the latter twice or thrice. These distinctions are more than sufficient to demonstrate the two animals to be of very different kinds. Besides, upon a closer

\* See Nouveau traité de venerie, p. 75.

† See article Dog.

closer examination, we easily perceive, that, even externally, the wolf differs from the dog by essential and uniform characters. The appearance of the head and form of the bones are by no means the same. The cavity of the eye in the wolf is placed obliquely; the orbits are inclined; the eyes sparkle, and shine in the dark; instead of barking, he howls; his movements, though quick and precipitate, are more equal and uniform; his body is stronger, but not so flexible\*; his members are firmer, his jaws and teeth larger, and his hair coarser and thicker.

But these animals have a great resemblance in their internal structure. The wolves copulate like the dogs, and have an osseous penis, surrounded with a ring, which swells and hinders them from separating. When the females are about to bring forth, they search for a concealed place in the inmost recesses of the forest. After fixing on the spot, they make it smooth and plain for a considerable space, by cutting and tearing up with their teeth all the brambles and brush-wood. They then bring great quantities of moss, and prepare a commodious bed for their young, which are generally five or six, though sometimes they bring forth seven, eight, and even nine, but never less than three. They come into the world blind, like the dogs; the mother suckles

\* Aristotle tells us, that the neck of the wolf consists of one continued bone. But this is a mistake; for the wolf's neck is composed of vertebrae, and is equally flexible as that of a dog.



suckles them some weeks, and soon learns them to eat flesh, which she prepares for them by tearing it into small pieces. Some time after, she brings them field-mice, young hares, partridges, and living fowls. The young wolves begin by playing with these animals, and at last worry them; then the mother pulls off the feathers, tears them in pieces, and gives a part to each of her young. They never leave their den till the end of six weeks or two months. They then follow their mother, who leads them to drink in the hollow trunk of a tree, or in some neighbouring pool. She conducts them back to the den, or, when any danger is apprehended, obliges them to conceal themselves elsewhere. Though, like other females, the she-wolf is naturally more timid than the male; yet, when her young are attacked, she defends them with intrepidity; she loses all sense of danger, and becomes perfectly furious. She never leaves them till their education is finished, till they are so strong as to need no assistance or protection, and have acquired talents fit for rapine, which generally happens ten or twelve months after their first teeth, which commonly fall out in the sixth month\*, are replaced.

Both males and females are capable of generating at the age of two years. The females, it is probable, like those of other species, are sooner mature for this operation than the males. It is

\* See la Venerie de du Fouilloux, p. 100. certainly,



certain, however, that they never come in season before the second winter after birth, which implies 18 or 20 months. A she-wolf, which I brought up, discovered no marks of love till the third winter, or more than two years and a half. We are assured by hunters \*, that, in every litter, there are more males than females; which confirms the general remark, that, in every species, the number of males exceeds that of the females. They likewise tell us, that some males attach themselves to the females, after the season of love is over, and accompany them till they are about to bring forth; that then the female steals off, and anxiously conceals her young, lest the father should devour them immediately after birth; but that, when brought forth, he takes an affection for them, supplies them with food, and, if deprived of their mother, provides for and protects them himself. These facts, however, have the air of fiction, and seem contrary to the natural dispositions of the wolf.

Wolves acquire their full growth at the end of two or three years, and live 15 or 20 years. This fact accords with what we have already remarked concerning many other species, that the time of growth is the seventh part of the total duration of life. When old, wolves turn whitish, and their teeth are much worn. When full, or fatigued, they sleep, but more during the day than the night, and it is always a kind of  
flight

\* See le Nouveau traité de la Venerie, p. 276.

slight slumber. They drink often; and, in the time of drought, when there is no water in the hollows, or in the trunks of old trees, they repair, several times in a day, to the brooks or rivulets. Though extremely voracious, if supplied with water, they can pass four or five days without meat.

The wolf has great strength, especially in the anterior parts of the body, in the muscles of the neck and jaws. He carries a sheep in his mouth, and, at the same time, outruns the shepherds; so that he can only be stopped or deprived of his prey by dogs. His bite is cruel, and always more obstinate in proportion to the smallness of the resistance; for, when an animal can defend itself, he is cautious and circumspect. He never fights, but from necessity, and not from motives of courage. When wounded with a ball, he cries; and yet, when despatching him with bludgeons, he complains not. He is harder, less sensible, and more robust than the dog. He runs and roams about whole days and nights; and, of all animals, he is perhaps the most difficult to conquer in the chase. The dog is gentle and courageous; the wolf, though ferocious, is timid. When he falls into a snare, he is so overcome with terror, that he may be either killed or taken alive, without resistance. He allows himself to be chained, muzzled, and led where you please, without exhibiting the least symptom of resentment or discontent. The senses of the

wolf

wolf are excellent, but particularly his sense of smelling, which often extends farther than his eye. The odour of carrion strikes him at the distance of more than a league. He likewise scents live animals very far, and hunts them a long time by following their tract. When he issues from the wood, he never loses the wind. He stops upon the borders of the forest, smells on all sides, and receives the emanations of living or dead animals brought to him from a distance by the wind. Though he prefers living to dead animals; yet he devours the most putrid carcases. He is fond of human flesh, and, were he stronger, he would perhaps eat no other. Wolves have been known to follow armies, to come in troops to the field of battle, where bodies are carelessly interred, to tear them up, and to devour them with an insatiable avidity: And, when once accustomed to human flesh, these wolves ever after attack men, prefer the shepherd to the flock, devour women, and carry off children. Wolves of this vitious disposition are distinguished by the name of *Loups garoux* \*, or wolves that should be guarded against.

Whole countries are sometimes obliged to arm, in order to destroy the wolves. Princes have particular equipages for this species of hunting, which is both useful and necessary. Hunters distinguish wolves into *young*, *old*, and *very old*. They are known by the tracts of their feet.

The

\* See la chasse du loup de Gaston Phoebus.

The older the wolf, his feet are the larger. The she-wolf's feet are longer and more slender ; her heel is also smaller, and her toes thinner. A good blood-hound is necessary for hunting the wolf ; and, when he falls into the scent, he must be coaxed and encouraged ; for all dogs have an aversion to the wolf, and proceed with coldness in the chase. When the wolf is raised, the grey-hounds are let loose in pairs, and one is kept for dislodging him, if he gets under cover ; the other dogs are kept as a reserve. The first pair are let after the wolf, and are supported by a man on horse-back ; then the second pair are let loose at the distance of seven or eight hundred paces ; and, lastly, the third pair, when the other dogs begin to join and teaze the wolf. The whole together soon reduce him to the last extremity ; and the hunters complete the business by stabbing him with a dagger. The dogs have such a reluctance to the wolf's flesh, that it must be prepared and seasoned, before they will eat it. The wolf may also be hunted with beagles or hounds ; but, as he darts always straight forward, and runs for a whole day without stopping, the chase is irksome, unless the beagles be supported by grey-hounds, to teaze him, and give the hounds time to come up.

In the country, though men, attended with mastiffs, beat the bushes, lay snares and baits, dig pits, and scatter poisoned pieces of meat ; yet the number of these destructive animals never  
decreases,



decreases, especially in woody countries. The British pretend to have cleared their island of this rapacious creature; and yet I am assured that wolves still exist in Scotland \*. As there is little wood in the southern parts of Britain, it was a more easy task to extirpate the wolf.

The hair and colour of these animals vary with the climate, and sometimes even in the same country. In France and Germany, beside the common wolves, we find some with thicker and more yellow coloured hair. These wolves, more wild, though less destructive, than the other kind, never trouble the flocks or the habitations of men, and live solely by hunting. In the northern countries, we meet with some wolves which are entirely white, and others entirely black; and the latter are larger and stronger than the former. The common species are very generally diffused: They are found in Asia †, Africa ‡, and America §, as well as in Europe. The wolves of Senegal || resemble those of France; but they are larger and more rapacious. The wolves of Egypt \*\* are smaller than those of Greece. In the East, and particularly in Persia, wolves are exhibited as spectacles to the people. When young, they

\* See supplement to this article.

† See *Le Voyage de Pietro della Valle*, vol. 4. p. 4.

‡ *Hist. Gen. des Voyages*, par M. l'Abbé Prevôt, tom. 5. p. 85.

§ *Le Voyage du Le Clercq*, p. 488.

|| *Hist. gen. des Voyages*, tom. 3. p. 285. *Voyage de le Maire aux isles Canaries, Cap Verd, &c.* p. 100.

\*\* *Arist. Hist. animal.* lib. 8. cap. 28.



they are taught to dance, or rather to perform a kind of wrestling with a number of men. Chardin tell us, that a wolf well educated in dancing, is sold at 500 French crowns. This fact proves, that these animals, by time and restraint, are susceptible of some kind of education. I have brought up several of them: When young, or during their first year, they are very docile, and even careffing; and, if well fed, they neither disturb the poultry, nor any other animal. But, at the age of 18 months or two years, their natural ferocity returns, and they must be chained, to prevent them from running off, and doing mischief. I reared one till the age of 18 or 19 months, in a court along with fowls none of which he ever attacked; but, for his first essay, he killed the whole in one night, without eating any of them. Another having broken his chain, run off, after killing a dog with whom he had lived in great familiarity. I kept a she-wolf three years in a large court; and, though shut up, when very young, along with a mastiff dog of the same age, she could never suffer him to approach even when she came in season. She provoked, she attacked, she bit the dog, who at first only defended himself, but at last he worried her.

There is nothing valuable in the wolf but his skin, which makes a warm durable fur. His flesh is so bad that it is rejected with abhorrence by all other quadrupeds; and no animal but a wolf

wolf will voluntarily eat a wolf. The smell of his breath is exceedingly offensive. As, to appease hunger, he swallows indiscriminately every thing he can find, corrupted flesh, bones, hair, skins half tanned and covered with lime, he vomits frequently, and empties himself oftener than he fills. In fine, the wolf is consummately disagreeable; his aspect is base and savage, his voice dreadful, his odour insupportable, his disposition perverse, his manners ferocious; odious and destructive when living, and, when dead, he is almost perfectly useless.

## S U P P L E M E N T.

In the history of the wolf I remarked, that this animal was entirely extirpated in England. By way of recompense, it would appear, that these voracious creatures have found out new countries to inhabit. Pontoppidan alledges, that they existed not in Norway before the year 1718. He says, that, during the last war between Sweden and Norway, the wolves passed the mountains by following the provisions of the army \*.

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O

Some

\* Pontoppidan's Nat. Hist. of Norway.

Some English authors, who treat of British zoology, have reproached me for maintaining that wolves still exist in the northern parts of their island. I never did affirm this as a fact, but only said \*, that I was assured that wolves 'still existed in Scotland.' Lord Morton, then President of the Royal Society, a Scotsman worthy of the greatest credit and respect, and proprietor of large territories in that country, assured me of this fact in the year 1756. To his testimony I still adhere, because it is positive, and because the assertion of those who deny the fact, amount to a negative evidence only †.

The Viscount of Querhoënt, in his observations, tells us, that there are two species of wolves at the Cape of Good Hope, the one black, and the other gray with black spots. He adds, that they

\* See above, p. 207.

† It is amusing to see the Count de Buffon, notwithstanding the repeated assurances he has had to the contrary, still maintaining that there are wolves in the North of Scotland. He appeals to the evidence of the late Earl of Morton. We are fully disposed to give due weight to an authority so respectable, and so worthy of credit. But we are convinced that the Count has misapprehended his Lordship; for it is universally known to the inhabitants of Scotland, that not a single wolf has been seen in any part of that country for more than a century past.

they are stronger than those of Europe, and their skin is thicker, and their teeth more sanguinary; but that their dastardliness makes them less formidable, though, like the ounces, they sometimes, during the night, come into the streets of the city.

O 2

The

## The BLACK WOLF.

**I** Describe this animal only as a supplement to the article *Wolf*; for both, I am persuaded, belong to the same species. In the history of the wolf†, it was remarked, that, in the north of Europe, there are some wolves which are white, and the others black, and that the black kind are the largest. The wolf represented in the Plate was brought from Canada. It was totally black, but smaller than our wolf: Its ears were somewhat larger, more erect, and at a greater distance from each other. The eyes were likewise a little smaller, and appeared to be more distant from one another, than in the common wolf. These differences, in my opinion, are too inconsiderable to constitute a distinct species. The greatest difference is that of the size. But, as I have oftener than once remarked, all the animals common to the northern parts of Europe and America differ in size; and the black wolf of Canada, which is smaller than those of Europe, only tends to confirm the general fact. Besides, as he had been taken when very young, and ever afterwards confined with a chain, constraint alone was perhaps sufficient to prevent him

† See above, p. 207.





Plate LXVII



*A. Bell Sculp.*

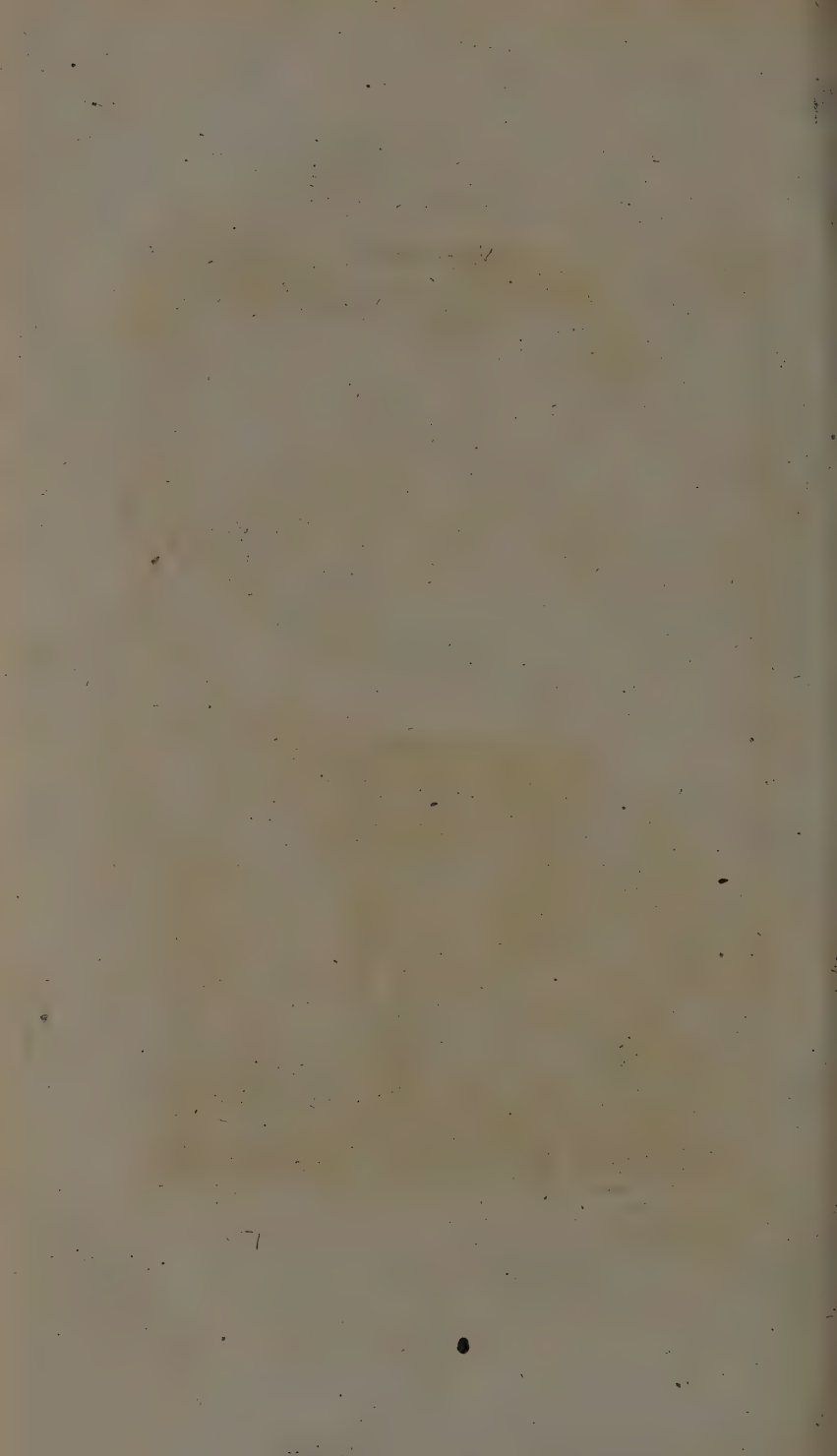
WOLF.

Plate LXVIII.



*A. Bell & Sulp.*

BLACK WOLF.



him from acquiring his full growth. The common wolf is also smaller and less numerous in Canada than in Europe, and the savages esteem it for its skin \*. The black wolf, the lynx, and the fox, are very numerous in North America ; and yet the black fox is very rare, and his skin is much more beautiful than that of the black wolf, which makes but a very coarse fur.

I shall only add, that this black wolf resembled the common wolf, both in figure and disposition ; for he became rapacious only with age, and, like the wolf, he was ferocious without courage.

O 3 THE

\* Voyage de Saggard Theodat, p. 307.



## T H E F O X\*.

**T**HE fox is famous for craftiness; and he merits, in some measure, the reputation he has acquired. What the wolf executes by force alone, the fox performs by address, and often with more success. Without combating dogs or shepherds, without attacking the flocks, or disinterring the bodies of the dead, the fox is more certain of procuring his food. He exerts more genius than motion, and all his resources are within himself. Acute as well as circumspect, ingenious, and patiently prudent, he diversifies his conduct, and always reserves some art for unforeseen accidents. Of his own preservation he is extremely vigilant. Though equally indefatigable, and even nimbler than the wolf,

\* ‘ Dog with a sharp nose, lively hazel eyes, sharp erect ears, body tawney red, mixed with ash-colour; fore part of the legs black; tail long, strait, bushy, tipped with white; subject to much varieties in colour;’ *Pennant’s Synops. of quad.* p. 152.

In Greek, *Αλωπηξ*; in Latin, *Vulpes*; in Italian, *Volpe*; in Spanish, *Raposa*; in German, *Fuchs*; in Swedish, *Raef*; in Polish, *Liszka*; in French, *Le Renard*.

*Vulpes*; *Gesner. Icon. anim. quad.* p. 88.

*Vulpes*; *Raii Synops. quad.* p. 177.

*Canis vulpes*, cauda erecta, apice nigro; *Lyn. Syst. Nat.* p. 59.

*Vulpes vulgaris*; *Klein. quad.* p. 71.

*Canis fulvis*, pileis cineris intermixtis; *Brissou, regn. anim.* p.

wolf, he trusts not entirely to the swiftness of his course. The fox knows how to ensure safety by providing himself with an asylum, where he retires from pressing dangers, where he dwells, and where he brings up his young. He is not a vagabond, but lives in a settled domestic state.

This difference, though it appears even among men, has greater effects, and supposes more powerful causes, among the inferior animals. The single idea of a house or settled place of abode, indicates a singular attention to self. The choice of situation, the art of making and rendering a house commodious, and of concealing the avenues to it, imply a superior degree of sentiment. The fox is endowed with this quality, and manages it with advantage. He fixes his abode on the border of the wood, in the neighbourhood of cottages: He listens to the crowing of the cocks and the cries of the poultry. He scents them at a distance; he chooses his time with judgment; he conceals his road as well as his design; he slips forward with caution, sometimes even trailing his body, and seldom makes a fruitless expedition. If he can leap the wall, or get in underneath, he ravages the court-yard, puts all to death, and then retires softly with his prey, which he either hides under the herbage, or carries off to his kennel. He returns in a few minutes for another, which he carries off, or conceals in the same manner, but in a different place. In this way he proceeds till the progress

gress of the sun, or some movements perceived in the house, advertise him that it is time to suspend his operations, and to retire to his den. He plays the same game with the catchers of thrushes, wood-cocks, &c. He visits the nets and bird-lime very early in the morning, carries off successively the birds which are entangled, and lays them in different places, especially near the sides of high-ways, in the furrows, under the herbage or brushwood, where they sometimes lie two or three days ; but he knows perfectly where to find them, when he is in need. He hunts the young hares in the plains, seizes old ones in their seats, never misses those which are wounded, digs out the rabbits in the warrens, discovers the nests of partridges and quails, seizes the mothers on the eggs, and destroys a vast quantity of game. The wolf is not more noxious to the peasant than the fox to the gentleman.

The chase of the fox requires less apparatus, and is more amusing, than that of the wolf. To the latter every dog has great reluctance ; but all dogs hunt the fox spontaneously and with pleasure ; for, though his odour be strong, they often prefer him to the stag or the hare. He may be hunted with terriers, hounds, &c. Whenever he finds himself pursued, he runs to his hole ; the terriers with crooked legs, or turnspits, go in with most ease. This mode answers very well when we want to carry off a whole litter of foxes, both mother and  
young.

young. While the mother defends herself against the terriers, the hunters remove the earth above, and either kill or seize her alive. But, as the holes are often under rocks, the roots of trees, or sunk too deep in the ground, this method is frequently unsuccessful. The most certain and most common method of hunting foxes, is to begin with shutting up their hole, to place a man with a gun near the entrance, and then to search about with the dogs. When they fall in with him, he immediately makes for his hole ; but, when he comes up to it, he is met with a discharge from the gun. If he escapes the shot, he flies with full speed, takes a large circuit, and returns again to the hole, where he is fired upon a second time ; but, finding the entrance shut, he now endeavours to escape by darting straight forward, with the design of never revisiting his former habitation. He is then pursued by the hounds, whom he seldom fails to fatigue, because he purposely passes through the thickest parts of the forest or places of the most difficult access, where the dogs are hardly able to follow him ; and, when he takes to the plains, he runs straight out without stopping or doubling.

But the most effectual mode of destroying foxes, is the laying of snares baited with a pigeon, a live fowl, &c. I once suspended on a tree, at the height of nine feet, some meat, bread, and bones. The foxes had been at severe exercise during the night ; for, next morning, the earth  
all



all around was beaten, by their jumping, as smooth as a barn-floor. The fox is exceedingly voracious; beside flesh of all kinds, he eats, with equal avidity, eggs, milk, cheese, fruits, and particularly grapes. When the young hares and partridges fail him, he makes war against rats, field-mice, serpents, lizards, toads, &c. Of these he destroys vast numbers; and this is the only service he does to mankind. He is so fond of honey, that he attacks the wild bees, wasps, and hornets. They at first put him to flight by a thousand stings; but he retires only for the purpose of rolling himself on the ground to crush them; and he returns so often to the charge, that he obliges them to abandon the hive, which he soon uncovers, and devours both the honey and wax. In a word, he eats fishes, lobsters, grass-hoppers, &c.

The fox has a great resemblance to the dog, especially in his internal parts. His head, however, is larger in proportion to his body; his ears are also shorter, his tail thicker, his hair longer and more bushy, and his eyes more inclined. He differs still more from the dog by a strong offensive odour which is peculiar to him, and by his natural disposition; for he is not easily, and never fully tamed: He languishes when deprived of liberty, and if kept too long in a domestic state, he dies of chagrin. He does not copulate with the female dog\*: If they have

no

\* See my experiments on this subject, article Dog.



no rooted antipathy, they are at least indifferent to each other. Foxes produce but once a year; and the litter commonly consists of four or five, seldom six, and never less than three. When the female is full, she retires, and seldom goes out of her hole, where she prepares a bed for her young. She comes in season in the winter; and young foxes are found in the month of April. When she perceives that her retreat is discovered, and that her young have been disturbed, she carries them off one by one, and goes in search of another habitation. The young are brought forth blind; like the dogs, they grow 18 months, or two years, and live 13 or 14 years.

The senses of the fox are equally good as those of the wolf; his sentiment is more delicate; and the organs of his voice are more pliant and perfect. The wolf sends forth only frightful howlings; but the fox barks, yelps, and utters a mournful cry like that of the peacock. He varies his tones according to the different sentiments with which he is affected: He has an accent peculiar to the chase, the tone of desire, of complaint, and of sorrow. He has another cry expressive of acute pain, which he utters only when he is shot, or has some of his members broken; for he never complains of any other wound, and, like the wolf, allows himself to be killed with a bludgeon without complaining; but he always defends himself to the last with

with great courage and bravery. His bite is obstinate and dangerous; and the severest blows will hardly make him quit his hold. His yelping is a species of barking, and consists of a quick succession of similar tones; at the end of which he generally raises his voice similar to the cry of the peacock. In winter, and particularly during frost and snow, he yelps perpetually; but, in summer, he is almost entirely silent, and, during this season, he casts his hair. The skins of young foxes, and of those taken in summer, are of little value. The flesh of the fox is not so bad as that of the wolf: Dogs, and even men, eat it in autumn, especially when he has been fattened with grapes; and his skin in winter makes excellent furs. He sleeps sound, and may be easily approached without wakening: He sleeps in a round form, like the dog; but, when he only reposes himself, he extends his hind legs, and lies on his belly. It is in this situation that he spies the birds along the hedges, who have such an antipathy to him, that they no sooner perceive him, than they send forth soft shrill cries to advertise their neighbours of the enemy's approach. The jays and black birds, particularly, follow the fox from tree to tree, sometimes two or three hundred paces, often repeating the watch-cries.

I brought up some young foxes: Their offensive odour made it necessary to keep them in stables or places which were not much frequented. This, perhaps, might be one reason why they

they were less tame than the wolf, which was kept near the house. At the age of five or six months, the young foxes pursued the ducks and fowls; and, therefore, it became necessary to chain them. I kept two males and a female two years. I tried in vain to make the males copulate with bitches: Though they had never seen females of their own species, and were stimulated by the strongest desires of Nature, they uniformly rejected the bitches. But, whenever a she-fox was presented to them, though chained, they instantly covered her, and she brought forth four whelps. The young foxes, who, when at liberty, had darted on the poultry, never attempted to touch a single fowl, after they were chained. A living hen was generally fixed near them for a whole night; and, though victuals were kept from them for many hours; yet, in spite of hunger and of opportunity, they never forgot that they were chained, and disturbed not the hen.

The fox is so extremely subject to the influences of climate, that the varieties of this species are almost as numerous as those of the domestic animals. Most of our foxes are reddish; but some of them are of a silver gray: In both, the end of the tail is white. In Burgundy, the latter are called *coal foxes*; because their feet are remarkably black. Their bodies have also the appearance of being shorter, because they are better clad with hair. There are some who are  
really

really longer than the other kinds, and of a dirty gray colour, nearly the same with that of old wolves. But it is uncertain whether this difference constitutes a real variety, or is produced by the age of the animal, who, perhaps, grows whiter as he advances in years. In the northern regions, the foxes are of all colours, black, blue, gray, iron-coloured, silver gray, white, white with yellow feet, white with black heads, white with the extremity of the tail black, reddish with the throat and belly entirely white; and, lastly, some of them have a black line along the spine, crossed with another black line over the shoulder. The latter are larger than the other kinds, and have black throats. The common species are more generally diffused than any of the others. We find them in every part of Europe\*, in the northern and temperate regions of Asia†, and in America‡; but they are very rare in Africa, and in the countries bordering on the Equator. Travellers who pretend to have seen them in Calicut||, and other southern provinces of India, have mistaken the jackal for the fox. Aristotle himself falls into a similar error, when he tells us§, that the foxes of Egypt are smaller than those of Greece; for what he calls the

\* See les Oeuvres de Renard, tom. 1. p. 175.

† Voyage d'Olearius, tom. 1. p. 368.

‡ Voyage de la Hontan, tom. 2. p. 42.

|| Voyage de Pyrard, tom. 1. p. 427.

§ Arist. Hist. animal. lib. 8. cap. 18.



the small foxes of Egypt are polecats\*, whose odour is intolerable. Our foxes, which belong originally to cold climates, have spread over all the temperate regions, but have never penetrated farther south than Spain and Japan†. What shows them to be natives of cold countries is, that all the varieties of the species are to be found in the high latitudes, and no where else: Besides, they support with ease the most extreme cold, and live in the neighbourhood of both poles‡. The fur of the white foxes is not much valued, because the hairs fall easily off; the silver gray is better; and the blue and cross kinds are in great request, on account of their rarity; but the black is the most precious; next to that of the sable, it is the best and dearest fur. We find foxes in Spitzbergen||, in Greenland§, in Lapland, and in Canada\*\*. In the latter country,

\* Aldrovand. *Quadrup. Hist.* p. 197.

† L'hist. du Japon, par Koempfer, tom. 1. p. 110.

‡ Narborough's voyage to the South Seas; Coreal, tom. 2. p. 184.; *Recueil des voyages du Nord*, tom. 2. p. 113.; *Recueil des voyages qui ont servi à l'établissement de la Comp. des Indes Orient.* tom. 1. p. 39.

|| Id. *ibid.*

§ Foxes abound over all Lapland. They are generally white, though some of them are of the common colour. The white furs are less esteemed; but the black, which are more rare, are sometimes sold for 40 or 50 French crowns; the hair is so fine and so long, that it hangs on any side you please; *Oeuvres de Renard*, tom. 1. p. 175.

\*\* *Voyages du pays des Hurons*, par Sagard Theodat, p. 304.



country, there are likewise crossed foxes; the common species is not so red as in Europe; and the hair is longer and more bushy.

## S U P P L E M E N T.

Travellers inform us, that the foxes of Greenland resemble dogs in the form of the head and feet, and likewise in their barking; that some of them are white, but the greatest number gray or blue; that they seldom change their colour, and, when the hair of the blue kind begins to fall off, it grows pale, and the fur is no longer valuable; that they live upon eggs and birds, and, when they are unsuccessful in finding this species of food, they content themselves with flies, bees, crabs, and what they can procure by fishing; and that they dwell in the clefts of rocks\*.

At Kamtschatka, the hair of the fox is very bushy, and so glossy and beautiful, that it excells the finest Siberian furs. The most valuable are the black chesnuts, those with black bellies and red bodies, and those of an iron colour†.

In Norway there are white, bay, and black foxes, and others which have two black lines on the reins. The latter kind, and those which are wholly black, are most esteemed. These furs are a considerable article of commerce: From the port

\* Hist. gen. des Voyages, tom. 19. p. 38.

† Id. ibid. p. 252.

Plate LXIX.



*A. Bell sculp.<sup>t</sup>*

FOX.



port of Bergen alone, more than 4000 foxes skins are annually exported. Pontoppidan, who often indulges in the marvellous, tell us, that a fox had ranked several heads of fishes into rows, at some distance from a fisher's hut; that the people could not imagine what might be his intention, but that, a little afterwards, a crow, which lighted to feed upon the heads, fell a sacrifice to his cunning device. He adds, that these animals make use of their tail in catching lobsters, &c \*.

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\* Pontoppidan's Nat. Hist. of Norway.

## THE BADGER \*.

**T**HE Badger is an indolent, diffident, solitary animal. He retires to the most secret places, to the inmost recesses of the forest, and there digs a subterranean habitation. He seems to fly society, and even the light, and spends three fourths

\* The badger has six cutting teeth, and two canine in each jaw; five toes before, five behind, with very long strait claws on the fore-feet; and a transverse orifice between the tail and the anus.—He has small eyes, short rounded ears, a short thick neck, with nose, chin, lower sides of the cheeks, and middle of the forehead white; ears and eyes inclosed in a pyramidal bed of black, hairs on the body long and rude, their bottoms a yellowish white, middle black, ends ash-coloured; throat, breast, belly, and legs black; tail covered with long hairs, coloured like those of the body; legs very short and thick; claws on the fore-feet very long; a foetid white matter exudes from the orifice beneath the tail; an animal of a very clumsy make; *Pennant's synops. of quad.* p. 201.

In Latin, *Meles*, *Taxus*; in Italian, *Tasso*; in Spanish, *Tafugo*, *Texon*; in German, *Tachs*, *Dachs*, *Dar*; in Swedish, *Gräfswin*; in Polish, *Jazwicc*, *Borsuc*, *Kot-dziki*, *Zbik*; in French *le Blaireau* ou *Taiffon*.

*Meles*; *Gesner, quad.* p. 86.

*Taxus* five *Meles*; *Ray Synops. quad.* p. 185.

*Ursus meles*, cauda concolore, corpore supra cinereo, subtus nigro, fascia longitudinali per oculos auresque nigra; *Linn. Syst. Nat.* p. 70.

*Meles pilis ex fordide albo et nigro variegatis vestita, capite taeniis alternatim albis et nigris variegato*; *Briss. Regn. animal.* p. 253.



fourths of life in his dark abode, from which he never departs but in quest of subsistence. As his body is long, his legs short, his claws, especially those of the fore-feet, very long and strong, he digs and penetrates the earth with greater facility than any other animal. He makes his hole winding and oblique. The fox, who cannot dig with equal dexterity, avails himself of the operations of the badger : Being unable to make him quit his habitation by force, the fox practises every art to render him uneasy : He stands sentinel at the entrance of the hole, and even defiles it with his ordure. He afterwards takes possession, enlarges, and fits it up for his own accommodation. The badger, though obliged to change his habitation, leaves not his country. He goes to a small distance only, where he digs a fresh hole, from which he removes not, except in the night ; and, as he never goes far, he returns upon the approach of danger. This is his only mean of safety ; for he cannot escape by flight : His legs are too short for quick motion. When at some distance from his hole, he is soon overtaken by the dogs. They seldom, however, accomplish their purpose without assistance. The hair of the badger is very thick, and his legs, jaws, teeth, and claws, are exceedingly strong. These natural weapons he uses with courage and dexterity : He lies on his back, resists all the efforts of the dogs, and wounds them in the most dangerous manner. He is, besides, very tenacious

cious of life, fights long, makes a brave defence, and persists to the very last extremity.

Formerly, when badgers were more common, terriers were trained to hunt and to take them in their holes. The badger defends himself by retiring and throwing back the earth, in order to stop or bury the dogs. He can only be taken by opening the hole above, after the dogs have pushed him to its extremity. The people lay hold of him with pincers, and then muzzle him, to prevent his biting. I have kept some of them, which had been taken in this manner, a considerable time. The young ones are easily tamed; they play with the dogs, and follow the person who feeds them. But, when taken old, they continue always savage. They are neither mischievous nor ravenous, like the wolf and fox; and yet they are carnivorous. They eat every thing presented to them, as flesh, eggs, cheese, butter, bread, fish, fruit, nuts, grain, roots, &c. But raw flesh they prefer to every other food. They sleep the whole night and three fourths of the day; and yet they are subject to a lethargic or benumbed state during winter, like the marmottes or dormice. This great quantity of sleep makes them fat, though they eat but little; and, for the same reason, they can support hunger with ease, and often remain in their holes three or four days together, especially during snow.

They keep their habitations extremely clean, and never defile them with their ordure. The male

male is seldom found with the female. When about to bring forth, she cuts down the herbage, bundles it up, and trails it with her feet to the bottom of the hole, where she makes a commodious bed for herself and her young. She brings forth in summer; and the litter commonly consists of three or four. When somewhat advanced, she brings them victuals. She now travels in the night to greater distances than formerly. She uncovers the earth from bee-hives, and carries off the honey; she rushes into the burrows of rabbits, and seizes their young; she likewise lays hold of field-mice, lizards, serpents, grasshoppers, and birds eggs, which she conveys to her offspring, whom she often leads to the mouth of the hole, in order to suckle or to feed them.

These animals are naturally chilly: Those brought up in the house would never quit the corner of the fire, and often approach so near as to burn their feet, which do not readily heal. They are subject to the itch, and often infect the dogs which enter their holes, unless they be afterwards carefully washed. The hair of the badger is always rude and greasy. Between the anus and tail, there is a pretty large fissure, penetrating about an inch deep, from which continually exudes an unctuous ill scented liquor, which the animal is fond of sucking. The flesh of the badger has not a very bad taste; and coarse furs, collars for dogs, coverings for horses, &c. are made of his skin.

We know of no varieties in this species : We have endeavoured, without success, to find the fow-badger spoken of by hunters. Dufouilloux \* tells us, that there are two species of badgers, the fow and the dog-badger ; and that the fow-badger is fatter, whiter, and grosser, both in the body and head, than the dog-badger. These differences are extremely trivial ; and he acknowledges, that they are not to be perceived without an accurate inspection †. This distinction I consider as a vulgar error, probably founded on the double name of this animal, both in Latin, viz. *meles* and *taxus*, and in French, viz. *blaireau* and *taïsson*. Besides, those species which have varieties, are commonly very numerous and generally diffused : That of the badger, on the contrary, is one of the least numerous and most limited. We are not certain that they exist in America, unless we regard as a variety the animal sent from New York, of which M. Brisson ‡ has

\* La Venerie de Dufouilloux, p. 72.      † Id. ibid.

‡ *Meles supra alba, infra ex albo flavicans*.—The *mele alba*, from the extremity of the muzzle to the origin of the tail, is one foot nine inches long, and the tail is nine inches in length. The eyes are proportionably small, the legs very short, and the claws white. The whole body is covered with very thick hair, white on the superior, and of a yellowish white on the inferior, part of the body. It is found in New York, from whence it was transported by M. de Reaumur ; *Brisson, Regn. animal.* p. 255. He should have added to this description, that it was smaller, and that its nose was shorter than our badger. Besides, we perceive not from the dried skin, whether it had the fissure or purse under the tail.

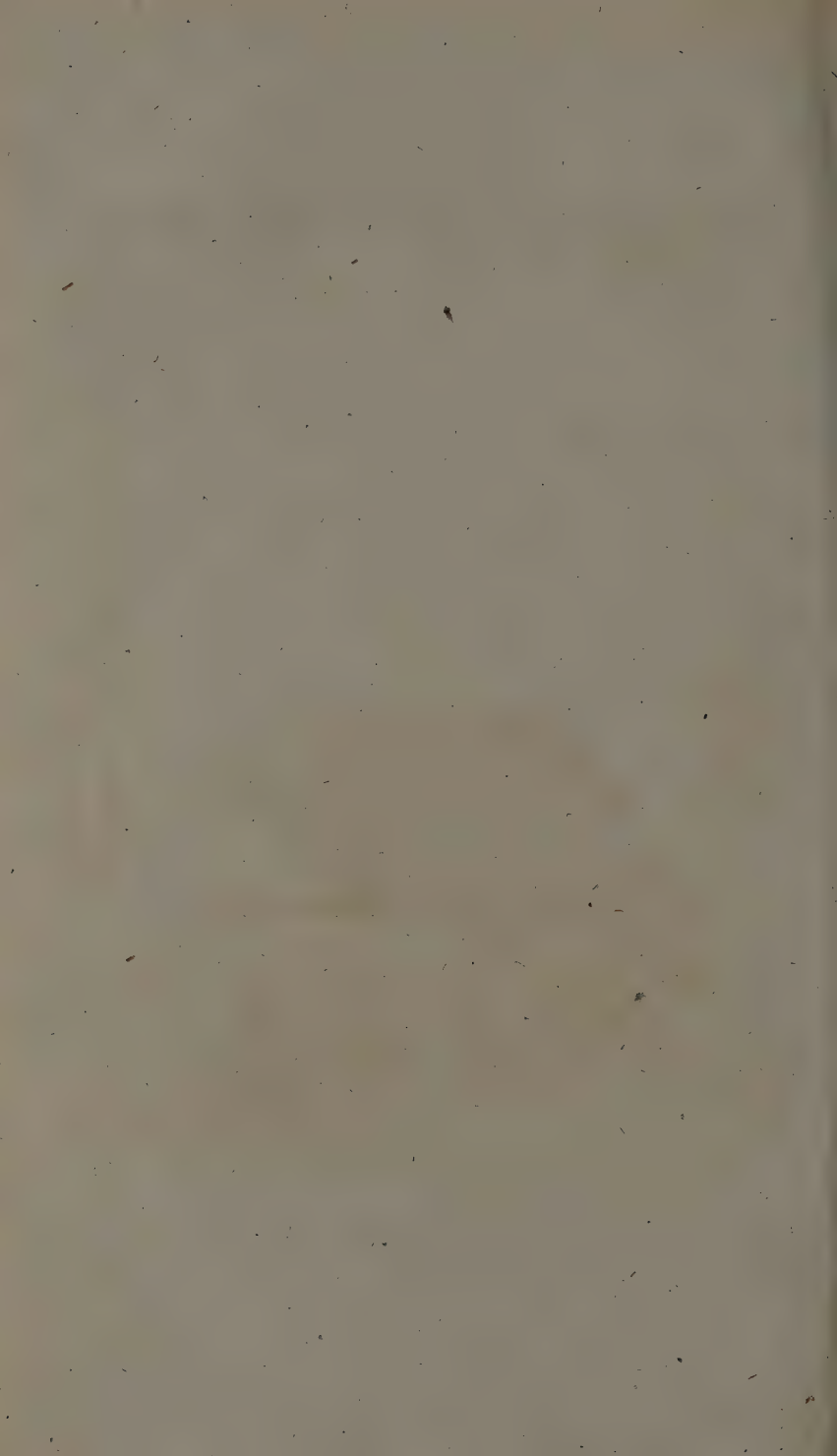




*A. Bell Sculp.*

BADGER





has given a short description under the name of the *white badger*. There are none in Africa; for the animal from the Cape of Good Hope, described by Kolbe \* under the name of the *stinking badger*, is a different species; and it is doubtful whether the *Fossa* of Madagascar, mentioned by Flacourt, who says it resembled the French badger, be a real badger, or some other animal. It has never been taken notice of by other travellers: Dr Shaw even says, that the badger is totally unknown in Barbary †. It seems likewise not to exist in Asia: It was not known to the Greeks; for Aristotle never mentions it, and the badger has no name in the Greek language. Hence this species of quadruped, an original native of the temperate climates of Europe, has never spread beyond Spain, France, Italy, Germany, Britain, Poland, and Sweden; and it is every where very scarce. The badger admits not only of no varieties, but he even approaches not to any other species. His characters are deeply marked, and very singular. The alternate belts upon his head, and the fissure under his tail, are perfectly peculiar; and his body is nearly white above, and almost black below, which is contrary to all other animals, whose bellies are always of a lighter colour than their backs.

THE

\* Descript. du Cap, par Kolbe, tom. 3. p. 64.

† Shaw's travels.

# T H E O T T E R \*.

**T**HE Otter is a voracious animal, but fonder of fish than of flesh: He never quits the margins of rivers or of lakes, and often depopulates the fish ponds. He swims with more ease than the beaver; for the latter has membranes on his hind feet only, and the toes of his forefeet are separate; but the otter has membranes on all his feet. He swims almost as quick as he walks. He never goes to the sea like the beaver; but traverses the fresh waters and rivers to very considerable distances. He often swims under

\* The otter has six cutting teeth, and two canine, in each jaw; five toes on each foot, each toe connected by a strong membrane. He has short ears, eyes placed near the nose, thick lips, and large whiskers. The whole colour of his body is of a deep brown, except two small spots on each side of the nose, and another below the chin: His legs are short, thick, loosely joined to the body, capable of being brought to a line with the body, and of performing the part of fins: Each toe is connected to the other by a broad strong web. His length is 23 inches, and that of the tail 16; *Pennant's Synops. of quad.* p. 238.

In Greek, *Ευδρα*; in Latin, *Lutra*, *Lytra*, *Lutrix*, *Lutris*; in Italian, *Lodra*, *Lodria*, *Loutra*; in Spanish, *Nutria*; in German, *Fischotter*; in Swedish, *Witter*; in Polish, *Wydra*; in French, *La Loutre*.

*Lutra*; *Gesner. hist. quad.* p. 684. *Icon. animal. quad.* p. 85.

*Lutra*; *Ray, Synops. quad.* p. 187. *Klein, quad.* p. 91.

*Mustela Lutra*, plantis palmatis nudis, cauda corpore dimidio brevior; *Linn. Syst.* p. 66.

*Lutra castanei coloris.* *Briffon, Regn. anim.* p. 277.

under the water, and, after remaining pretty long, ascends to the surface for air. Properly speaking, he is not an amphibious animal, or an animal that can live equally in air and in water. He is not formed for continuing in the latter element ; for, like other terrestrial creatures, he requires the aid of respiration. When in pursuit of a fish, if he chances to be entangled in a net, he drowns ; and we perceive that he has not had time to cut a sufficient quantity of the meshes to effectuate his escape. His teeth resemble those of the martin, but they are proportionally longer and stronger. For want of fishes, crabs, frogs, water rats, or other food, he gnaws the young twigs, and eats the bark of aquatic trees ; he likewise eats the young herbage in the spring. He is neither afraid of cold nor of moisture. The female comes in season in winter, brings forth in March, and the litter consists of three or four. Young animals are generally beautiful ; but the young otter is not so handsome as the old. A head ill-shaped, ears placed low, eyes small and covered, a lurid aspect, awkward motions, an ignoble and deformed figure, and a kind of mechanical cry which he repeats every moment, seem to indicate a stupid animal. The otter, however, acquires industry with age, sufficient, at least, to carry on a successful war against the fishes, who, both with regard to sentiment and instinct, are much inferior to other animals. But I can hardly allow him to have  
the

the talents of the beaver, or even the habits ascribed to him, such as that of always ascending the rivers, in order to swim the more easily down the current, when loaded with his prey \* ; that of sitting up and flooring his house to exclude the water ; that of hoarding a store of fishes, in case of a scarcity ; and, lastly, that of being easily tamed, of fishing for his master, and even bringing the fish into the kitchen. All I know is, that the otters dig no habitations for themselves ; that they take possession of the first hole they find under the roots of poplars or willows, in the cliffs of rocks, and even in piles of floating wood ; that they deposit their young on beds made of twigs and herbs ; that we find in their habitations, heads and bones of fishes ; that they often change their places of abode ; that they banish their young at the end of six weeks or two months ; that those I attempted to tame endeavoured to bite, though they were only taking milk, and unable to eat fish ; that some days after they became more gentle, perhaps because they were weak or sick ; that, so far from being easily accustomed to a domestic life, all of them which I attempted to bring up, died young ; that the otter is naturally of a savage and cruel disposition ; that, when he gets into a fish pond, he is equally destructive as the polecat in a hen-house ; that he kills many more fishes than he can eat, and then carries off one in his mouth.

Though

\* See Gesner. hist. quad. p. 685.



Though the otter does not cast his hair, his skin is browner, and sells dearer in winter than in summer; it makes a very fine fur. His flesh has a disagreeable fishy taste. His retreats exhale a noxious odour, from the remains of putrid fishes; and his own body has a bad smell. The dogs chase the otter spontaneously, and easily apprehend him when at a distance from water or from his hole. But, when seized, he defends himself, bites the dogs most cruelly, and sometimes with such force as to break their leg-bones, and never quits his hold till death looses his jaws. The beaver, however, which is not a very strong animal, pursues the otters, and permits them not to live upon the banks he possesses.

This species, though not very numerous, is spread over Europe from Sweden to Naples; and we find them even in North America\*. They were well known to the Greeks†, and probably extend over all the temperate climates, especially in places which abound with water; for the otter can neither dwell in burning sands, nor in dry deserts. He equally flies barren rivers, and those that are too much frequented. I believe none of them are to be found in very warm countries; for the *jiya* or *carigueibeju*‡, which is found  
at

\* See le voyage de la Hontan, tom. 2. p. 38.

† See Arist. Hist. animal. lib. 8. cap. 5.

‡ *Jiya quae et carigueibeju appellatur a Brasiliensibus; Marcg. Hist. Brasil. p. 234. Lutra Brasiliensis; Ray, Synopf. animal. quadrup.*

at Cayenne \*, and has been named the Brazilian otter, appears to be a different species: Whereas the North American otter resembles the European in every article, except that his fur is blacker and finer than that of the Swedish or Muscovite otter †.

## S U P P L E M E N T.

Pontoppidan assures us, that, in Norway, the otters frequent the salt as well as the fresh waters; and that they live among the fragments of rocks, from which the hunters decoy them by imitating their voice, which consists of a low kind of whistle. He adds, that they eat only the fatty parts of fishes; and that a tamed otter, which was fed with milk, brought fish daily to the house ‡.

In some notes communicated by M. de la Borde, I find that there are three species of otters in Cayenne; the black, which weighs 40 or 50 pounds; the yellowish, which weighs 20 or

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quadrup. p. 189. *Lutra pollice digitis brevior*; Linnaeus. *Lutra atricoloris*, maculâ sub gutture flavâ; Brisson. regn. animal. p. 278.

\* *Lutra nigricans*, caudâ depressâ et glabrâ; Barrere, hist. de la France equinoxiale, p. 155.

† See le voyage de la Hontan, tom. 1. p. 84.

‡ Pontop. Nat. Hist. of Norway.

25 pounds ; and the small grayish kind, which weighs not above three or four pounds. He further remarks, that these animals are very frequent in Guiana, along the rivers and marshes where fishes abound : They sometimes appear in numerous troops, and are so fierce that they cannot be approached. Their bite is cruel, and they defend themselves against the dogs. They litter in holes which they dig in the banks. They are often tamed and brought up in houses. I have remarked, says M. de la Borde, that all the animals of Guiana are easily accustomed to a domestic state, and become even troublesome by their familiarity.

M. Aublit, a learned botanist formerly quoted, and M. Olivier, surgeon to the King, who have long resided in Cayenne, affirm, that there are otters in that country so large, that they weigh 90 or 100 pounds. They live in the great and unfrequented rivers, and their heads often appear above the water. Their cry is heard at great distances ; their hair is very soft, but shorter than that of the beaver, and generally of a dark brown colour. They live upon fishes, and eat likewise the grains which fall into the water from the banks of the rivers.

I have added the figure of a small animal sent me from Guiana, under the name of *the small fresh-water otter of Cayenne*, which appears to be the third species mentioned by M. la Borde. It is only seven inches long, from  
the

the tip of the nose to the extremity of the body. The tail of this small otter, like that of the water-rat, has no hair; its length is six inches seven lines, and five lines thick at the origin, diminishing gradually to the extremity, which is white, though the rest of the tail is brown; and, in place of hair, it is covered with a rough granulated skin, like shagreen; it is flat below and convex above. The whiskers, and the long hairs under the eyes, are about an inch in length. All the under part of the body and head, as well as the fore-part of the fore-legs, is white. The top and sides of the head and body are marked with large brownish black spots, and the intervals are of a yellowish gray colour. The black spots correspond on each side of the body. There is a white spot above the eye. The ears are large, and seem to be longer than those of the common otter. The legs are short; the fore-feet have five unconnected toes; there are the same number in the hind-feet, but they are connected with membranes.

T H E

Plate LXXI.



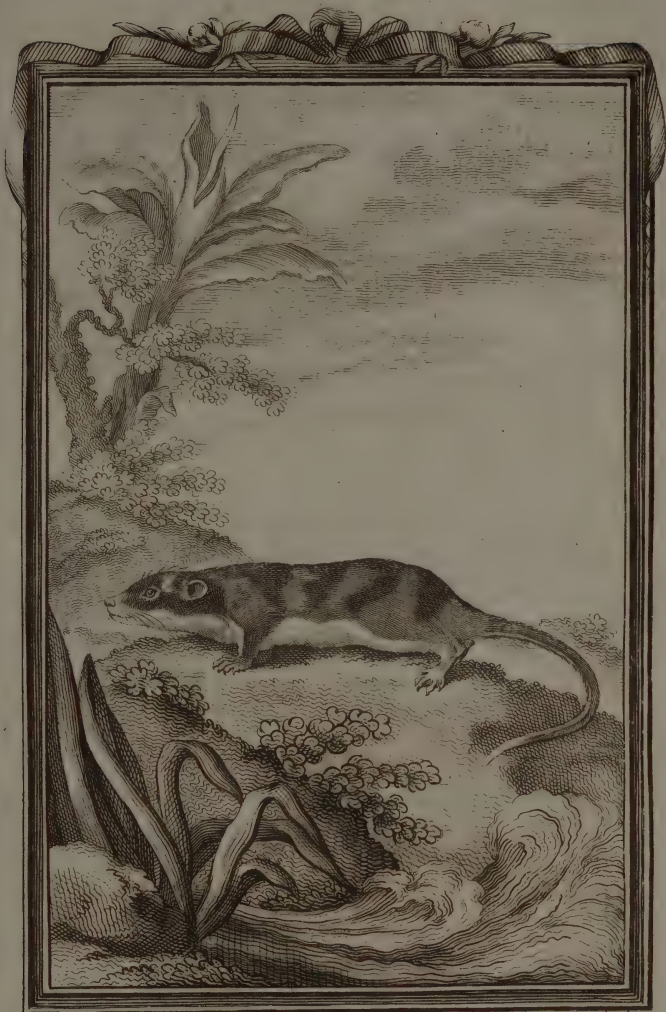
OTTER

*A. Bell Sculp.*





Plate LXXII.



*A. Bell sculp.*

SMALL OTTER OF GUIANA.



## T H E M A R T I N \*.

**M**OST naturalists have described the martin and the pine-weasel, or yellow breasted martin, as animals of the same species. Gefner† and Ray, in imitation of Albertus, affirm, that they intermix promiscuously. This fact, however, which is supported by no other evidence, appears, at least, to be doubtful: I believe, on the contrary, that these animals have no intercourse, but form two distinct and independent

\* This animal has broad rounded ears, lively eyes, a brown head, tinged with red; the body, sides, and legs are covered with hair, ash-coloured at the bottoms, bright chestnut in the middle, and black at the tips; the throat and breast are white, and the belly deep brown; the tail is full of hair, and of a dusky colour; the feet are broad, and covered at bottom with thick down; the claws are white; and the length of the body is eighteen inches, and of the tail ten; *Pennant. Synops. of quad.* p. 215.

In Latin, *Martes domestica*, *Foyna*, *Gainus*, *Schisnus*; in Italian, *Foina*, *Fouina*; in German, *Hucks marder*; in French, *la Fouine*.

*Martes domestica*; *Gefner. Icon. anim. quad.* p. 97.

*Martes*, aliis *Foyna*; *Raii synops. quad.* p. 200.

*Mustela Martes*, pedibus fissis, corpore fulvo nigricante, gula pallida; *Lynn. syst. nat.* p. 67.

*Martes faxorum non fagorum*, seu domesticus; *Klein. quad.* p. 64.

*Mustela pilis in exortu albidis, castaneo colore terminatis, venter albus*; *Brisson. regn. animal.* p. 246.

† Gefner, *hist. quad.* p. 76. Ray, *synops. quad.* p. 200.

pendent species. To illustrate this point, I shall give a few reasons. If the pine-weasel were only a wild martin, or the martin a domestic pine-weasel, the first would constantly preserve the same characters, and the latter would be subject to variations; as the wild cat uniformly remains the same, while the domestic cat assumes all sorts of colours. The martin, on the contrary, never varies, but preserves its peculiar characters as constantly as the pine-weasel retains those which are proper to it. This alone is a sufficient proof, that these two animals are specifically different, and that the one is not a simple variety of the other. Besides, there is no reason for regarding the martin as a domestic animal: He is no more domestic than the fox or the polecats, which, like him, approach the habitations of men in quest of their prey; and he has no greater communication with mankind than the other animals we call wild or savage. The martin, therefore, differs from the pine-weasel both in disposition and temperament; for the latter flies the open fields, lives in the most secret recesses of the forest, and is never numerous in cold climates: But the martin approaches our habitations, takes up his abode in old buildings, in hay-lofts, and in holes of the walls. The species is likewise spread in great numbers over all the temperate countries, and is even found in warm regions, as in Madagascar\*, and the

\* See Voyages de Struys, tom. 1. p. 30.



the Maldiva islands†, and is never seen in high latitudes.

The martin has a fine countenance, a lively eye, supple limbs, and a flexible body. His movements are all exceedingly nimble; he rather bounds and leaps, than walks. He climbs rough walls with ease and alacrity; enters the pigeon or hen-houses, eats the eggs, pigeons, fowls, &c. and the female often kills great numbers, and transports them to her young. He likewise seizes mice, rats, moles, and birds in their nests. I kept one of these animals a considerable time. He tamed to a certain degree; but never formed any attachment, and continued always so wild that it was necessary to chain him. He made war against the rats, and attacked the poultry, whenever they came in his way. He often got loose, though chained by the middle of the body. At first, he went to no great distance, and returned in a few hours, but without discovering any symptoms of joy, or of affection to any particular person. He, however, called for victuals like a cat or a dog. Afterwards he made longer excursions, and, at last, he thought proper never to return. He was then about a year and a half old, seemingly the age at which nature assumes her full ascendancy. He eat every thing presented to him, except salad and herbs. He was fond of honey, and preferred hemp-seed to every other grain. We remarked, that he

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drank

† Voyage de Pyrard, tom. 1. p. 132.

drank very often; that he sometimes slept two days successively; that, at other times he would sleep none for two or three days; that, before sleeping, he folded himself in a round form, and covered his head with his tail; and that, while awake, his motions were so violent, so perpetual, and so incommodious, that, though he had not disturbed the fowls, we found it necessary to chain him, to prevent him from breaking every thing. We have had in our possession several other martins of a more advanced age, which had been taken in nets; but they continued to be totally savage, bit all who attempted to touch them, and would eat nothing but raw flesh.

Martins, it is said, go with young as long as cats. We meet with young ones from spring to autumn; and, therefore, it is probable that they bring forth more than once a-year. The younger females litter only three or four at a time; but the more aged produce six or seven. When about to bring forth, they take up their abode in magazines of hay, in holes of walls, which they stuff with straw and herbs, in clefts of rocks, or in the hollow trunks of trees; and, when disturbed, they remove their young, who seem to arrive very soon at maturity; for the one I kept had nearly attained its full growth in one year; Hence we may conclude, that those animals live eight or ten years only. They have a kind of musky smell, which is not very disagreeable. The pine-weasel and the martin, like some other animals,

animals, have two vesicles, one on each side of the extremity of the rectum, which contain an odoriferous matter, similar to that procured from the civet cat. Their flesh retains a little of this odour; and yet that of the pine-weasel is not bad. The flesh of the martin is more disagreeable, and his skin is likewise much less valuable.

## S U P P L E M E N T.

I have added the figure of an American animal, which was sent from Guiana to M. Aubry, curate of St Louis. Though this animal wants the teeth, it is so similar in all the other parts of the body to the common martin, that it may be regarded as a variety of the same species. It differs from the martin only in having the colour of the hair sprinkled with black and white, a shorter tail, and spots on the head. The martin of Guiana is three or four inches longer than the European; but the tail is proportionally shorter. The muzzle seems also to be longer; it is black, and the blackness extends above the eyes, passes under the ears along the neck, and loses itself in the brown hair of the shoulders. There is a large white space above the eyes, which spreads upon the front, surrounds the ears, forms a narrow band along the neck, and disappears on the shoulders. The ears are perfectly similar to those of

the martin. The top of the head is gray, mixed with white; the neck is brown interspersed with ash-coloured hairs; and the body is covered with a mixture of white and blackish hairs. These hairs are gray and ash-coloured at their origin, then brown, and black and white at the extremities. The under part of the jaw is of a blackish brown colour, which extends under the neck, and vanishes towards the belly, which is of a bright brown or chesnut. The legs and feet are covered with shining reddish black hair; and the toes have a greater resemblance to the toes of the squirrel and rat than to those of the martin. The great toes of the fore-feet are four lines long; but those of the hind-feet only two. The tail is more bushy at the origin than the extremity, and the hair of it is chesnut or a bright brown mixed with black.

We have given the figure of another Cayenne animal, which seems to have a great analogy to the former. It was drawn from the life at the fair of St German, in 1768, and measured 15 inches from the tip of the nose to the origin of the tail, which was eight inches, and more bushy at the root than at the extremity. This animal is short legged like our martins: The form of the head approaches nearly to that of the martin; but in the ears there is no resemblance. The body is covered with woolly hair: There are five toes on each foot, armed with small claws like those of the martin.

The

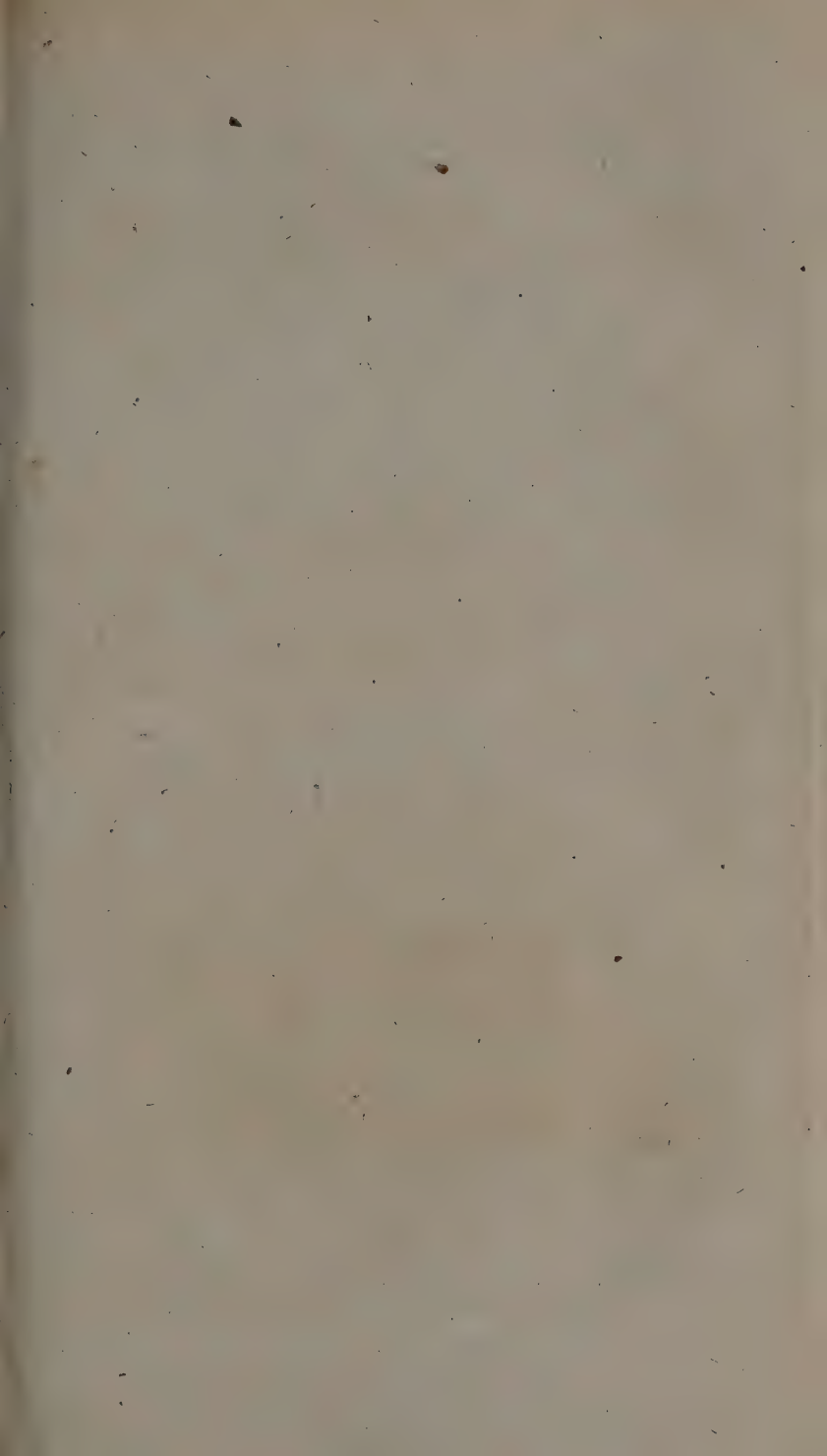
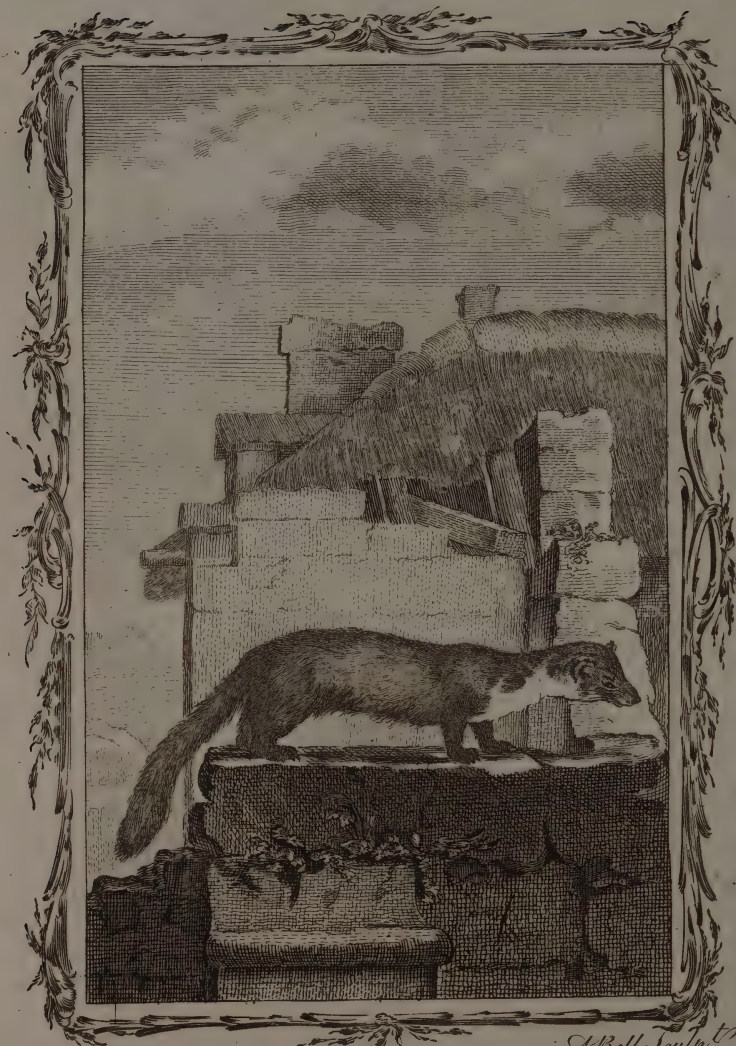




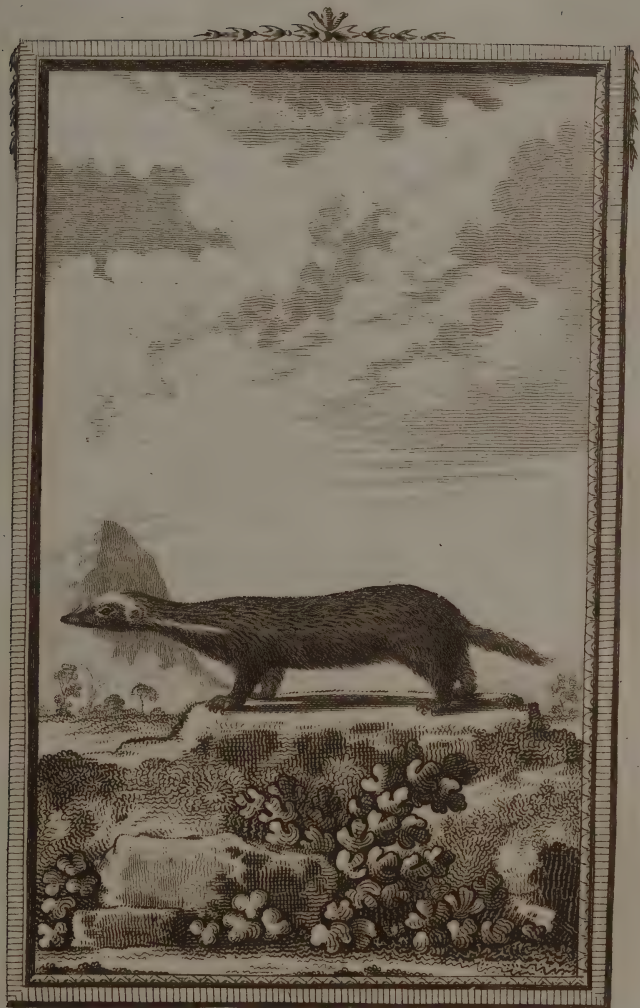
Plate LXXIII.



*A. Bell, Sculp.<sup>ts</sup>*

MARTIN

Plate LXXIV.



*A. Bell Sculp.*

MARTIN of GUIANA.





Plate LXXV.



*A. Bell, Sculp.*

SMALL MARTIN of GUIANA.



## The PINE-WEASEL, or YELLOW-BREASTED MARTIN\*.

**T**HIS animal is a native of northern regions, where the species is so numerous, that the quantity of their furs annually consumed is perfectly astonishing. There are very few of them in the temperate climates, and they exist not in very warm countries. Some of them are found in the forests of Burgundy, and likewise in those of Fountainbleau; but, in general, they are as rare in France as the martin is frequent. There are none of these animals in Britain; because they have no extensive forests in that country. They fly equally inhabited countries and uncovered fields. They dwell in the woods, and conceal not themselves among

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the

\* Weasel with a yellow breast and throat; the hair is of a dark chefnut colour, and of far superior fineness to the former; in other respects agreeing with it; *Pennant's Synops. of quad. p. 216.*

In Latin, *Martes, Marta, Marterus*; in Italian, *Marta, Martura, Marturo, Martorello, Martire*; in Spanish, *Marta*; in German, *Field marder, Wild Marder*; in Swedish, *Mard*; in French, *La Marte*.

*Martes sylvestris, martis altera species nobilior*; *Gesner. Icon. animal. quad. p. 99.*

*Martes*; *Ray, Synops. animal. quad. p. 200.*

*Mustela martes*; *Klein. hist. nat. quad. p. 64.*

the rocks, but traverse the forest and climb the trees. They live by hunting, and destroy prodigious quantities of birds, by eating their eggs. They seize squirrels, field-mice, &c. They also eat honey, like the martin and polecat. They never appear in the open fields, in the meadows, or in the vineyards. They approach not the dwellings of men; and they differ still farther from the martin in their manner of making their escape from the hunters. When the martin is pursued by a dog, he instantly runs to his hay-loft or his hole. The pine-weasel, on the contrary, runs a long time before the dogs, then climbs the trunk of a tree, and, from this station, he views them as they pass. The track which he leaves in the snow appears to be that of a large animal, because he always leaps, and both feet make but one impression. He is somewhat larger than the martin, and yet his head is shorter. His legs are longer, and consequently he runs more easily. His neck is yellow; but that of the martin is white. His hair is finer, more bushy, and less subject to fall off. The female prepares not a bed for her young; and yet lodges them most commodiously. The squirrels build nests in the tops of trees, with equal art as the birds. When the pine-weasel is about to bring forth, she climbs to the squirrel's nest, banishes the possessor, enlarges the entry to it, and there deposits her young. She likewise uses the old nests of ducks or buzzards, and holes of ancient trees,

trees, from which she dislodges the wood-peckers and other birds. She brings forth in the spring, and her litter consists of two or three only. Though her young come into the world blind, they soon acquire a considerable growth. She brings to them eggs and birds; and afterwards leads them out to hunt along with herself. The birds are so well acquainted with their enemies, that, when they perceive the pine-weasel, they utter the same mournful cry to advertise his approach, as when they see a fox. What shows that the birds are animated with hatred, rather than fear, is, that they follow at a distance, and utter this peculiar cry against all carnivorous animals, as the wolf, the fox, the pine-weasel, the wild cat, &c. but never against the stag, the roe, the hare, &c.

The pine-weasels are very frequent in the northern parts of America, Europe, and Asia. Many of them are brought from Canada, and they extend as far as Hudson's bay \*; and, in Asia, as far north as the kingdom of Tonquin † and the empire of China ‡. They ought not to be confounded with the sable, an animal whose fur is much more precious. The sable is black; but the pine-weasel is brown and yellow. The most valuable part of the skin of the latter is the brown, which extends along the whole back to the extremity of the tail.

T H E

\* Lade's Voyages, vol. 2. p. 227.

† Tavernier, tom. 4. p. 182. Hist. gen. des voyages, tom. 7. p. 117.

‡ Hist. gen. des voyages, tom. 6. p. 562.

## THE POLECAT\*.

THE polecat has a great resemblance to the martin in temperament, disposition, manners, and figure. Like the latter, he approaches our habitations, mounts on the roofs, takes up his abode in hay-lofts, barns, and unfrequented places, from which he issues during the night, in quest of prey. He steals sily into the court-yards, voleries, and pigeon-houses, where, with less noise than the martin, he makes greater havock, cutting off the heads of all the fowls, and then transporting them one by one to his magazine. If, as frequently happens, he cannot carry them off entire, on account of the smallness of the entry to his hole, he eats the brains,

\* The polecat has the space round the mouth, and the tips of the ears white; the head, body, and legs, of a chocolate colour, almost black; on the sides, the hairs are of a tawny cast, and the tail is black; the length of the body is 17 inches, and of the tail 6.

In Latin, *Putorius*; in Italian, *Foetta*, *Puzolo*; in German, *Ilitis*, *Ulk*, *Buntfing*; in Polish, *Vydra*, *Tchorz*; in French, *Le Putois*.

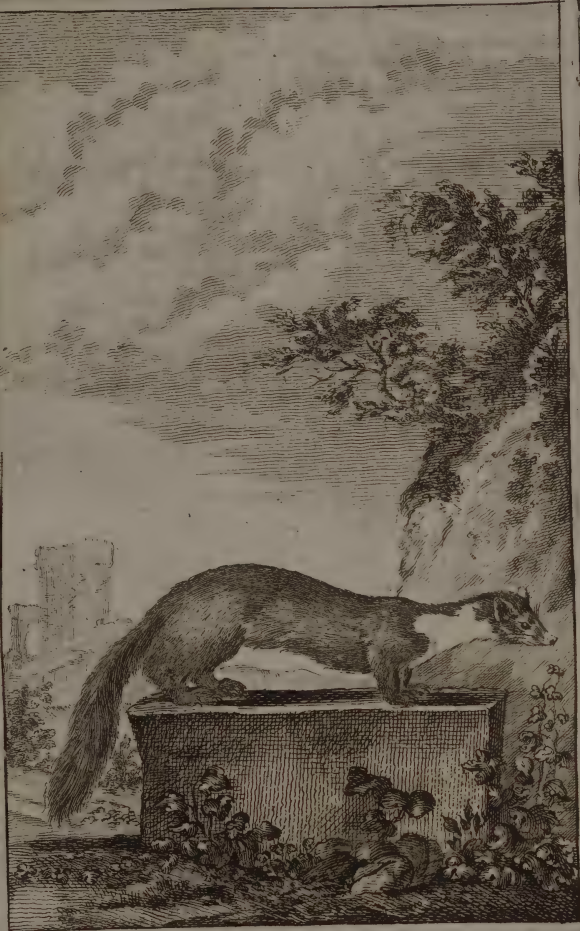
*Putorius*; *Gesner. Hist. quad. p. 767. Icon. quad. p. 99. Raii Synops. quad. p. 199.*

*Mustela putorius*, pedibus fissis, corpore flavo nigricante; ore auriculisque albis; *Lyn. Syst. p. 67.*

*Mustela pilis in exortu ex cinereo albidis, colore nigricante terminatis, vestita, oris circumferentia alba*; *Briffon. Regn. anim. p. 249.*



Plate LXXVI.



*A. Bell Sculp<sup>r</sup>*

YELLOW BREASTED WEASEL





brains, and takes only their heads along with him. He is likewise very fond of honey, attacks the hives in winter, and forces the bees to abandon them. He never retires far from the abodes of men. The spring is their season of love : The males fight for the female on the roofs of houses. They afterwards leave her, and go to pass the summer in the fields or in the woods. The female, on the contrary, continues in her habitation till she brings forth, and does not lead off her young till toward the end of summer. She litters three or four, and sometimes five, suckles them but a short time, and accustoms them early to eat blood and eggs.

In the villages, they live upon poultry ; and, in the country, they hunt for prey. During the summer, they take up their abode in rabbit-holes, in the cliffs of rocks, or in the hollow trunks of trees, from which they issue out in the night, and roam about the fields and woods, searching for the nests of partridges, larks, and quails. They climb trees in quest of the nests of other birds. They lie in watch for rats, field-mice, and moles ; and carry on a perpetual war against the rabbit, who cannot escape them, as they enter with ease into his hole. A single family of polecats is sufficient to destroy a whole warren. This would be a simple method of diminishing the number of rabbits in places where they are too abundant.

The

The polecat is somewhat less than the martin : His tail is also shorter, his muzzle sharper, and his hair blacker and more bushy : He has white hair on his front, and likewise on the sides of the nose and round the mouth. He differs still more from the martin in his voice ; the martin has a sharp piercing cry ; the cry of the polecat is more blunt. Each of them, as well as the pine-weasel and squirrel, have a deep grunting tone, which they repeat often when irritated. Lastly, the odour of the martin is very different from that of the polecat, which, instead of being agreeable, is extremely foetid ; and, from this circumstance, the animal obtained its Latin name *putorius*. He sends forth this insupportable odour to a great distance, especially when irritated. The dogs will not eat the flesh of the polecat ; and even his skin, though good, is in no estimation, because it never loses entirely its natural smell. This odour proceeds from two vesicles near the anus, from which an unctuous matter continually exudes ; and the effluvia of it is extremely offensive in the polecat, ferret, weasel, badger, &c. ; but it constitutes, on the contrary, a species of perfume, in the civet-cat, pine-weasel, martin, &c.

The polecat seems to be confined to the temperate climates : Few or none of them are found in the northern regions ; and, in warm countries, they are still more rare than the pine-weasel. The *meles Surinamensis*, or stifling weasel, is an  
animal

Plate LXXVII.



*A. Bell sculpt.*

(POLE CAT.)





animal of a different species ; and the polecat appears to be bounded, in Europe, from Italy to Poland. This animal, it is certain, avoids the cold ; for, in winter, he retires into the houses, and his steps are never seen in the snow, either in the woods or in fields which are distant from the habitations of men : He, perhaps, is equally averse to great heat ; for he is never found in warm climates.

THE

## T H E F E R R E T \*.

**W**HETHER the ferret and polecat belong to different species, has been a subject of doubt with some naturalists †. The resemblance of colour, in some ferrets, to that of the polecat, may have given rise to this doubt. The polecat, however, is a native of temperate climates, and is a wild animal, like the martin. But the ferret is a native of warm countries, and cannot subsist, even in France, unless in a domestic state. The ferret alone is used in hunting rabbits, because he is more easily tamed than the polecat. Both, indeed, have a strong and disagreeable odour. But the most convincing proof of their being different animals, is, that they have no intercourse with one another, and differ in a number

\* This animal has a very sharp nose, red fiery eyes, and round ears; the colour of the whole body is a very pale yellow; its length is about 14 inches, and that of the tail 5; *Pennant's Synops. of quad.* p. 214.

In Latin, *Viverra*, *Furo*, *Furunculus*; in Spanish, *Huron*, *Furam*; in German, *Frett*, *Frettel*, *Furette*; in Polish, *Laska*; in French, *Le Furet*.

*Viverra*, *Furo*, *Ictis*; *Gesner. Hist. quad.* p. 762. *Icon. quad.* p. 101.

*Mustela pilis subflavis longioribus, castaneo colore terminatis, vestita*; *viverra*, *mas.* *Mustela pilis ex albo subflavis vestita*; *viverra foemina*; *Briffon, Regn. anim.* p. 177.

*Mustela Furo*, *pedibus fissis, oculus rubicundus*; *Linn. Syst.* p. 68.

† *Linn. Syst. ibid.*

ber of essential characters. The body of the ferret is thinner and more lengthened, his head narrower, and his muzzle sharper, than those of the polecat. He is not endowed with the same instinct in finding subsistence, but, at least in our climates, must be carefully nourished within doors, and cannot exist in the fields; for those which are lost in the burrows of rabbits never multiply, but probably perish during the winter. The ferret also, like other domestic animals, varies in colour; and is equally common in warm regions \*, as the polecat is rare.

The female ferret is less than the male: When in season, she is so extremely ardent, that, we are assured, she dies, if her desires are not gratified †. Ferrets are brought up in casks or boxes, where they are furnished with beds of hemp or flax. They sleep almost continually. Whenever they awake, they search eagerly for food, which consists of bran, bread, milk, &c. They produce twice every year: The female goes six weeks with young: Some of them devour their young as soon as they are brought forth, instantly come again in season, and have three litters, which generally consist of five or six, and sometimes seven or eight, and even nine.

This animal is by nature a mortal enemy to the rabbit. Whenever a dead rabbit is, for the first time, presented to a young ferret, he flies upon

\* The ferret is found in Barbary, and is called *Nimse*. See Shaw's travels. † Gefner. hist. quad. p. 763.

upon it, and bites it with fury; but, if it be alive, he seizes it by the throat or the nose, and sucks its blood. When let into the burrows of rabbits, he is muzzled, that he may not kill them in their holes, but only oblige them to come out, in order to be caught in the nets. If the ferret is let in without a muzzle, he is in danger of being lost; for, after sucking the blood of the rabbit, he falls asleep; and even smoking the hole is not a certain method of recalling him; because the holes have often several entries which communicate with each other, and the ferret retires into one of these, when incommoded with the smoke. Boys likewise use the ferret for catching birds in the holes of walls or of old trees.

According to Srabo, the ferret was brought from Africa into Spain; which is by no means improbable, as Spain is the native climate of rabbits, and the country where formerly these animals most abounded. It may, therefore, be presumed, that, in order to diminish their number, which perhaps was inconvenient, ferrets were imported for the purpose of hunting rabbits in a profitable manner, instead of multiplying martins, which would have destroyed the rabbits without bringing any advantage to the hunters.

The ferret, though easily tamed and rendered docile, is extremely irascible. His odour is always disagreeable; but, when irritated, it becomes much more offensive. His eyes are lively,

lively, and his aspect is inflammatory; all his movements are nimble, and he is, at the same time, so vigorous, that he can easily overcome a rabbit, though at least four times larger than himself.

Notwithstanding the authority of commentators, it is still uncertain whether the ferret be the *ictis* of the Greeks. ‘The *ictis*,’ says Aristotle, ‘is a species of wild weasel, smaller than the little Maltese-dog, but resembling the weasel in its hair, in the whiteness of the under part of the body, and likewise in the craftiness of its manners. It admits of being tamed; and makes great havock among the bee-hives, being extremely fond of honey. It also attacks birds, and, like the cat, has an osseous penis†.’

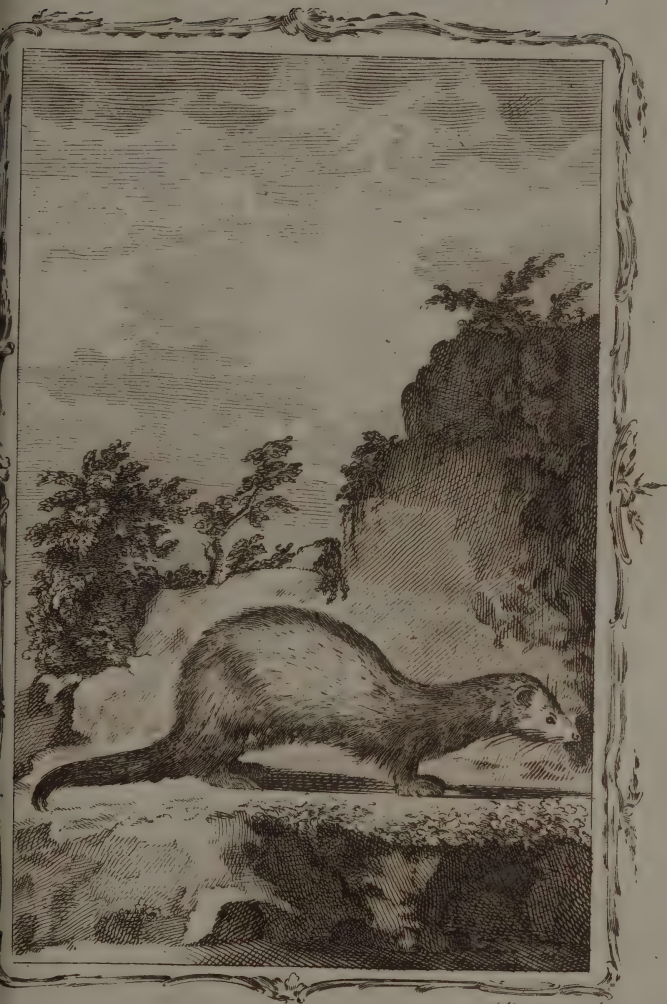
1. There appears to be a contradiction in saying that the *ictis* is a species of wild weasel, which admits of being tamed; for the common weasel, which, in this country, is the most savage of the two, is perfectly irreclaimable. 2. The ferret, though larger than the weasel, can never be compared, for size, to the lap-dog. 3. The ferret appears not to have the cunning of the weasel, nor indeed any craftiness at all: Lastly, he never attacks the bee-hives, nor is he fond of honey. I inquired of M. le Roi, inspector of the royal chases, concerning this last fact. His answer follows: ‘M. de Buffon may be assured, that the ferrets have no predilection for honey; but,

† Hist. anim. lib. 9. cap. 6.



‘but, when hungry, may be made to eat it.  
‘I have fed them several days with bread soaked  
‘ed in water mixed with honey. The two last  
‘days, they eat it in pretty large quantities; but  
‘the weakest of them began to be sensibly emaciated.’ This is not the first time that M. le Roi has obliged me with important facts. Having no ferrets, I tried the same experiment on the ermine, by giving him only pure honey to eat, and a little milk for drink: But he died in a few days. Thus neither the ermine nor the ferret are fond of honey, like the *ictis* of the ancients; which inclines me to think, that the word *ictis* is perhaps only a generic name; or, if it marks any particular species, it ought rather to be applied to the martin or polecat, both of which possess the craftiness of the weasel, attack the bee-hives, and are extremely fond of honey.

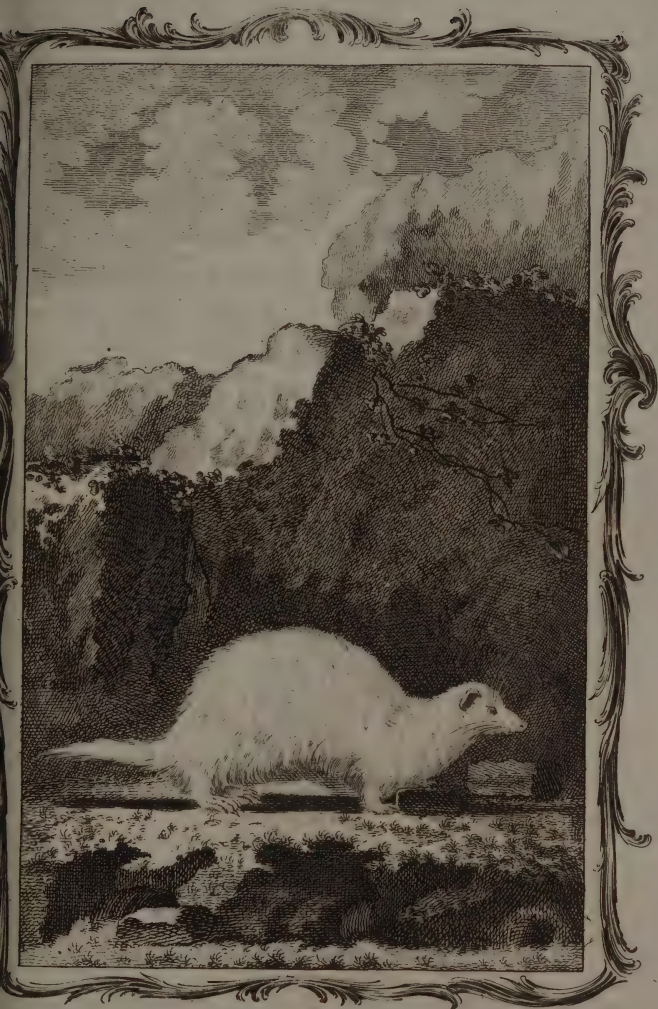
Plate LXXVIII.



*A. Bell & Co. sculp.*

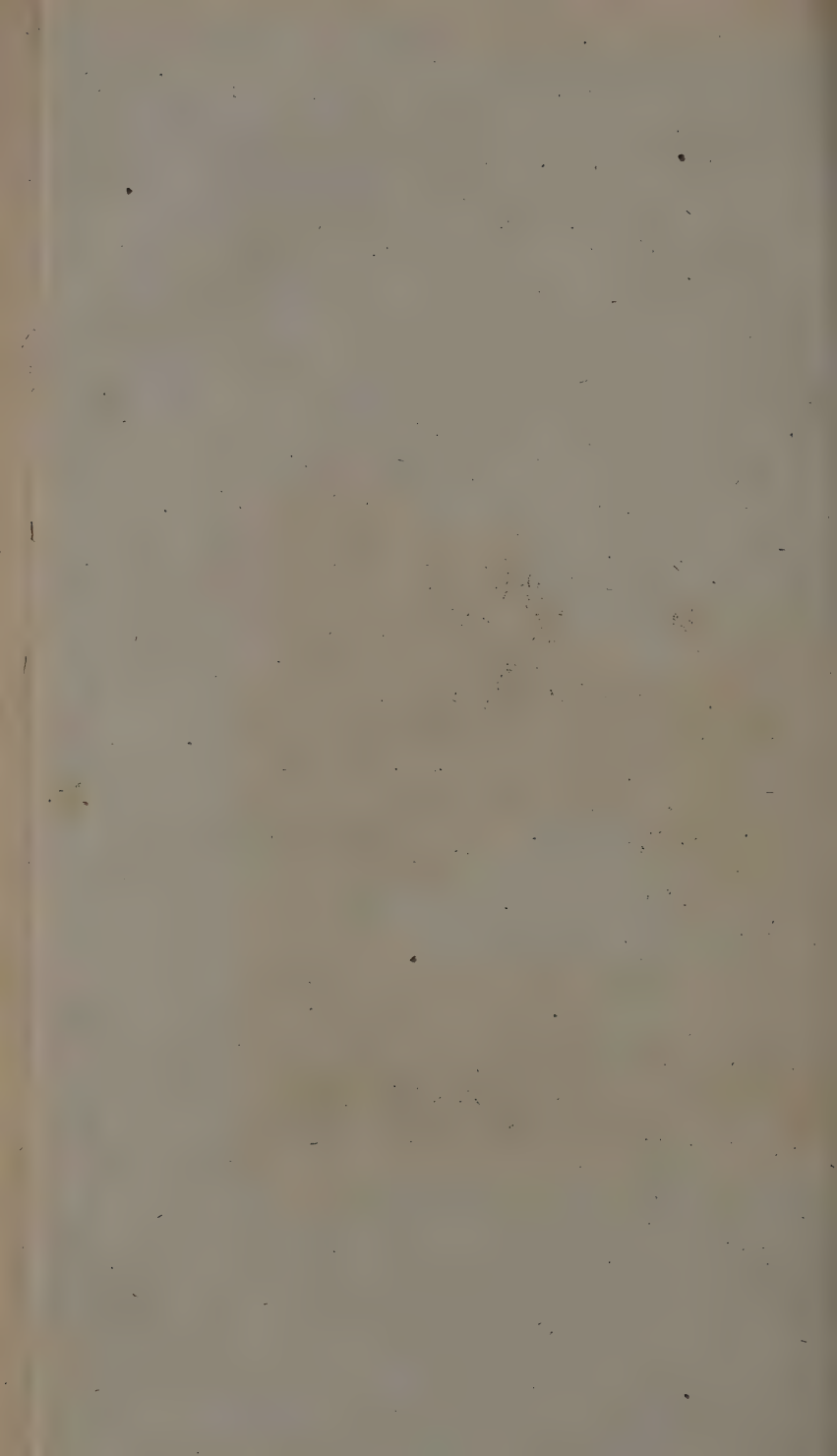
FERRET.





*A. Bell sculp.*

FERRET.





## THE WEASEL \*.

THE weasel is as common in temperate and warm climates †, as it is rare in the northern regions. The ermine, on the contrary, abounds in the north, is seldom met with in temperate climates, and never in warm countries. These animals, therefore, form two distinct species. The common weasel sometimes turns white during the winter, even in our climate. This circumstance might give rise to its being regarded as of the same species with the ermine. This mark is common to both: But there are others in which they differ. The ermine is reddish in summer, and white in winter; but the end of its tail is uniformly black. The end of the weasel's tail is yellow, even when the animal

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\* The weasel has small rounded ears; the whole upper part of the body is of a tawny brown colour, and the under part is entirely white. It has a brown spot beneath the corners of the mouth. The length of its body is between six and seven inches, and of the tail two and a half.

In Greek Γαλή; in Latin *Mustela*; in Italian, *Denmola*, *Balottula*, *Benula*; in Spanish, *Comadreia*; in German, *Wisele*; in French, *La Belette*; in English, *Weasel*, *Weefel*, *Foumart*, *Whitred*.

*Mustela* proprie sic dicta; *Gesner. Hist. quad. p. 752. Icon. quad. p. 99.*

*Mustela vulgaris*; *Ray, Synops. quad. p. 195. Klein, quad. p. 62.*

*Mustela supra rutila, infra alba*; *Briffon, regn. anim. p. 242.*

*Mustela nivalis, pedibus fissis, corpore albo, caudae apice vix pilis ullis nigris. Linn. Syst. p. 69.*

† The weasel is found in Barbary, and is called *Fert-el Steile*; *Shaw's travels.*

turns white in winter. It is, besides, always of a smaller size, and its tail is much shorter than that of the ermine. The weasel dwells not, like the ermine, in woods and deserts, but near the habitations of men. I have kept both species together; but animals which differ in climate, in constitution, and in disposition, never intermix. It is true, some weasels are larger or smaller than others; but the difference never exceeds an inch in the whole length of the body. But the ermine is two inches longer than the largest weasel. Neither of them can be tamed, but are kept wild in iron cages. Neither of them voluntarily eat honey, nor attack the beehives, like the polecat and martin. Thus the ermine is not the savage weasel, nor the *ictis* of Aristotle, which, he says, is easily tamed, and very fond of honey. The weasel and ermine, instead of being easily tamed, are so wild, that they will not eat when any person looks at them: They are in perpetual agitation, always endeavouring to conceal themselves: And, if a man wants to keep them, he must furnish them with a bundle of wool or flax, in which they wrap and hide themselves from the light. Thither they drag every thing they can lay hold of, and never eat but in the night. They allow fresh meat to lie three or four days, and even till it corrupt, before they touch it. They sleep three fourths of the day, and watch their prey during the night. When a weasel gets among the poultry, he attacks not the cocks or old hens, but,

but singles out the chickens and young birds, whom he kills with a single bite on the head; and then carries off the whole one by one. He likewise breaks the eggs, and sucks them with incredible avidity. In winter, they generally live in granaries and barns, where they often remain during the spring, and bring forth their young among the hay and straw. During this period the female makes war, with more success than the cat, against the rats and mice, who cannot escape her, because she follows them into their holes. She mounts the pigeon-houses, and destroys the pigeons, sparrows, &c. In summer, they retire farther from houses, especially into low grounds, about mills, along rivulets, conceal themselves among brush-wood, in order to surprise birds, and often take up their abode in old willows, where the female brings forth her young: She prepares for them a bed of straw, leaves, and other herbage, and litters, in the spring, from three to five. The young, like those of the polecat, pine-weasel, and martin, are brought forth blind; but they very soon acquire growth and strength enough to follow their mother in the chase. The weasels attack serpents, water-rats, moles, field-mice, &c. and, over-running the meadows, they devour quails and partridges, together with their eggs. Their motion consists of unequal and precipitant leaps; and, when they want to mount a tree, they make a sudden bound, by which they are at once ele-

vated several feet high. They leap in the same manner when they attempt to seize a bird.

These animals, as well as the polecat and ferret, have a disagreeable odour, which is stronger in summer than in winter; and, when pursued or irritated, their smell is felt at a considerable distance. They move always with caution and with silence, and never cry, but when they are hurt. Their cry is sharp, rough, and very expressive of resentment. As their own odour is offensive, they seem not to be sensible of a bad smell in other bodies. A peasant in my neighbourhood took three new-littered weasels out of the carcase of a wolf that had been hung on a tree by the hind feet. The wolf was almost entirely putrified, and the female weasel had made a nest of leaves and herbage for her young in the thorax of this putrid carcase.

## S U P P L E M E N T.

The author here ingenuously quotes a letter he received from the Countess of Noyan, dated at the Castle of Manceliere in Britany, July 20. 1751, in which that Lady assures him, that he had injured the character of the weasel, by alledging, that no art could reclaim or render him docile; because she had tried the experiment upon a young weasel taken in her garden,

den, which soon learned to recognise and to lick the hand from which it received its food, and became as familiar, careffing, and frolicksome, as a dog or squirrel.

This fact the author had still farther confirmed by a similar experiment made by M. Giely de Mornas, who trained a young weasel so completely, that the animal followed him wherever he went. The method of taming them is, to stroke them often and gently over the back, and to threaten, and even beat them, when they bite. Their odour is never offensive, but when they are irritated. They are fed with milk, boiled flesh, and water; and, unless they be starved, never eat honey, although presented to them.



## T H E   E R M I N E \*.

**T**H E weasel with a black tail, is called the *ermine*, and *roselet* by the French; the *ermine* when it is white, and the *roselet* when it is red or yellowish. Though less frequent than the ordinary weasel, they are still found in considerable numbers, especially in the ancient forests, and sometimes, during winter, in fields bordering upon woods. It is easy, at all seasons, to distinguish them from the common weasel; for

\* The upper part of the body is of a pale tawny brown colour, the edges of the ears and ends of the toes, of a yellowish white; the throat, breast, and belly white; the end of the tail black: The length of the body is ten inches, and of the tail five and a half. In the north of Europe, this animal becomes entirely white at the approach of winter, except the end of the tail; and it resumes its brown colour in the spring; *Pennant, Synops. of quad. p. 212.*

In Latin, *Hermellanus*, animal *Erminum*; in Italian, *Armellino*; in German, *Hermelin*; in Swedish, *Hermelin*, *Lekatt*; in Polish, *Gronostay*; in French, *L'Hermine*, or *Le Roselet*; in English, *Ermine*, *Stoat*.

*Mustela alba*; *Gesner, quad. p. 753.*

*Mustela candida*, five animal *ermineum recentiorum*; *Ray, Synops. quad. p. 198.*

*Mustela erminea*, plantis fissis, caudae apice nigro; *Linn. Syst. Nat. p. 68.*

*Mustela armellina*; *mustela alba*, extrema cauda nigra; *Klein, quad. p. 63.*

*Mustela hieme alba*, aestate supra rutila, infra alba, cauda apice nigro; *Brissou. Regn. animal. p. 243.*

for the end of their tail is always of a deep black, and the borders of the ears and toes are white.

We have little to add to what we formerly remarked concerning this animal \*. We shall only observe, that it changes its colour, as usual, in winter. I had one sent me, in the beginning of March 1757, which was then white. I kept it till April 1758, when it would probably have become white, had it been at liberty ; but it was confined in an iron cage, against the bars of which it perpetually rubbed, and, as it had not been sufficiently exposed to the cold, it still preserved its summer coat. It remains as savage as ever, and has lost nothing of its bad smell. In every other circumstance, it is a healthy vivacious animal, has lively eyes, a fine countenance, and movements so rapid, that it is impossible to follow them with the eye. It has always been fed with eggs and flesh ; but it touches not meat till it has become putrid. It never inclined to eat honey ; and, being deprived of victuals for three days, it died, after having taken a small quantity of honey. The skin of this animal is very precious. The furs of the ermine are finer and fairer than those of the white rabbit ; but they soon turn yellowish ; and, indeed, the ermines of our climate have always a slight tincture of yellow.

This animal is very frequent in the north, especially in Russia, Norway, and Lapland †, where,

as

\* See above, article Weasel.

† Oeuvres de Regnard, tom. 1. p. 178.

as in every other place, they are reddish in summer and white in winter. They feed upon small animals, and particularly a species of rat, which abounds in Norway and Lapland, to be afterwards mentioned. The ermines are rare in temperate climates, and are never found in warm countries. The Cape animal, called the *ermine* by Kolbe \*, and whose flesh, he remarks, is wholesome and agreeable to the palate, has no affinity to the ermine. The weasels of Cayenne, described by M. Barrere †, and the gray ermines of Tartary, and of the northern parts of China, mentioned by some travellers ‡, are also animals different from our weasels and ermines.

## S U P P L E M E N T.

In the natural history of Norway by Pontopidan, we have the following remarks.

‘ In Norway, the ermine lives among the fragments of rocks. This animal seems to belong to the weasel tribe. His skin is white, except the tail, which is spotted with black. The furs of Norway and Lapland preserve their whiteness better than those of Russia, which sooner turn yellowish; and, for this reason, the former are of greater request, even at Petersburg. The ermine catches mice like the cat, and, when

\* Descript. du Cap. de Bonne-esperance, p. 54.

† Descript. de la France equinoctiale.

‡ Hist. gen. des Voyages, tom. 6. p. 565.—603.



WEASEL.



*A. Bell sculp.*

ERMINE.



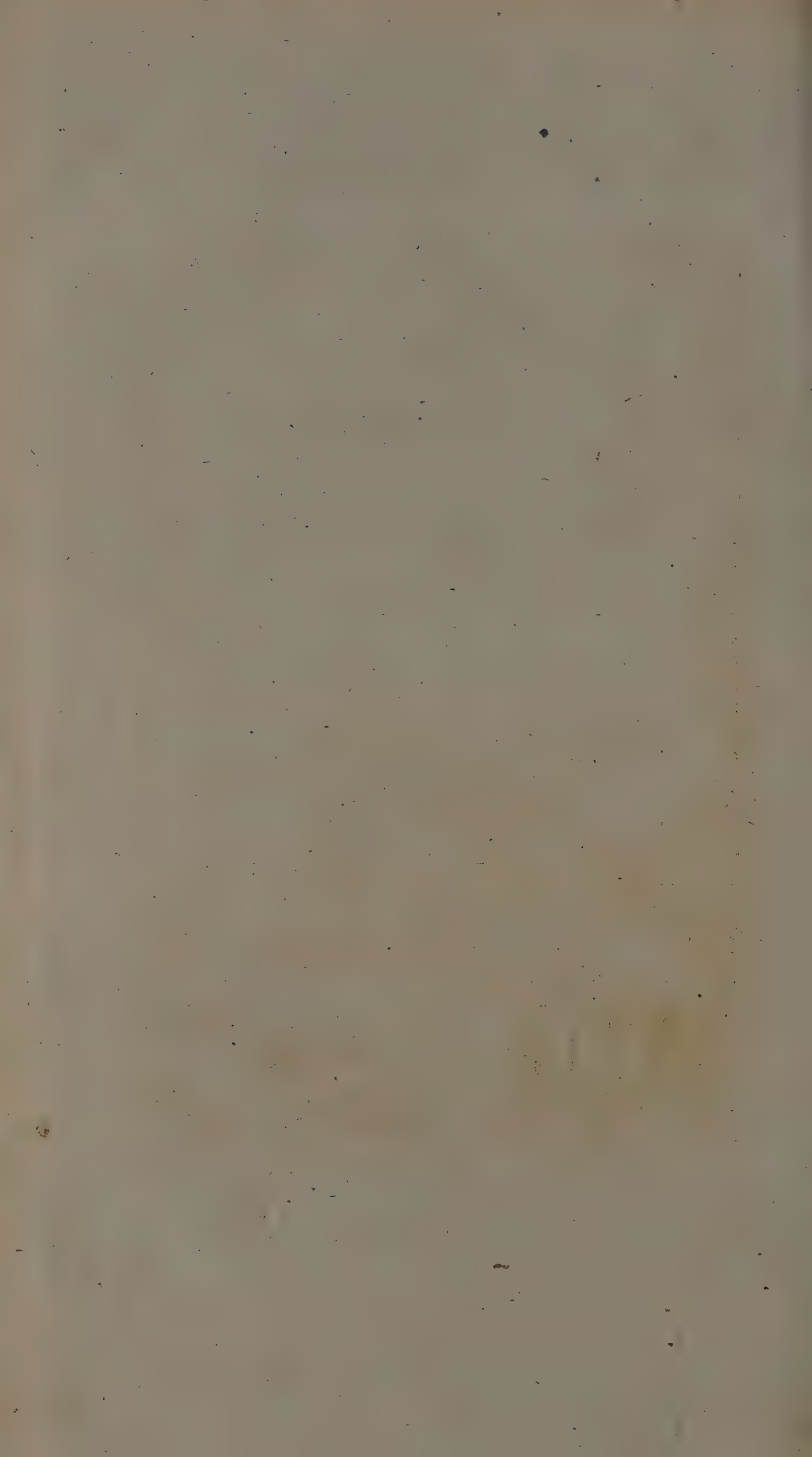


Plate LXXXI.



*A. Bell sculpt.*

GRISON.



' when practicable, carries off his prey. He is  
 ' particularly fond of eggs, and, when the sea is  
 ' calm, he swims over to the islands which lie near  
 ' the coast of Norway, where there are vast  
 ' quantities of sea fowls. It is alledged, that,  
 ' when the female brings forth on an island, she  
 ' conducts her young to the continent, upon a  
 ' piece of wood, piloting them with her snout.  
 ' This animal, though small, kills those of a  
 ' much larger size, as the rein-deer and bear.  
 ' He jumps into one of their ears when they  
 ' are asleep, and adheres so fast by his teeth,  
 ' that the creatures cannot disengage him. He  
 ' likewise surprises eagles and heath-cocks, by  
 ' fixing on them, and never quitting them, even  
 ' when they mount in the air, till the loss of  
 ' blood makes them fall down.'

The

## The GRISON, or GRAY WEASEL \*.

THIS animal is analogous to the weasel and ermine. M. Allamand gave the first description and figure of it under the name of the *grison*, in the 15th volume of the Dutch edition of my work, which he describes in the following manner.

‘ I received,’ says he, ‘ from Surinam, the  
‘ small animal represented in the plate †. In the  
‘ catalogue it was called the *gray weasel*, from  
‘ which circumstance I derived the name *grison*,  
‘ because I know not how it is denominated in  
‘ the country where it is found. The whole upper  
‘ part of its body is covered with deep brown  
‘ hair, having white points, which gives a gray-  
‘ ish brown colour : Under the head and neck is  
‘ a bright gray, because the hairs there are very  
‘ short, and the white part is of equal length  
‘ with the brown. The muzzle, and the under  
‘ part of the body and legs, are black ; which sin-  
‘ gularly contrasts with the gray colour on the  
‘ head and neck.

‘ The head of this animal is very large in proportion to its body ; its ears form almost a semicircle ; its eyes are large ; and its mouth is  
‘ armed

\* A new animal from Buffon's Supplement.

† Edition de Hollande, tom. 15.

Plate LXXXII.



ROSELET.





‘ armed with strong grinders, and sharp tusks.  
 ‘ It has six cutting teeth in each jaw, four of  
 ‘ them hardly rising above the gums. Both  
 ‘ the fore and hind feet have five toes, with yel-  
 ‘ lowish claws. The tail is pretty long, and ter-  
 ‘ minates in a point.

‘ The grison has a greater resemblance to the  
 ‘ weasel than to any other animal. But it be-  
 ‘ longs not to the weasel tribe ; for its body is  
 ‘ too short, and its legs are too long. It is not  
 ‘ mentioned by any author or traveller. I  
 ‘ shewed it to several persons who had lived  
 ‘ long in Surinam ; but none of them knew it ;  
 ‘ hence it either must be a rare animal, even in  
 ‘ its native country, or it must live only in de-  
 ‘ sert and unfrequented places. The length of  
 ‘ its body is about seven inches. I have not  
 ‘ been able to learn any thing of its history.’

T H E

## THE SQUIRREL\*.

THE squirrel is a little neat animal, and may be considered as in a state between savage and domestic. The gentleness, docility, and inoffensiveness of his manners, entitle him to regard and protection. Though he sometimes seizes birds, he is neither carnivorous nor destructive. Fruits, almonds, nuts, beech mast, and acorns, are his common food. He is handsome, lively, alert, and extremely vigilant and industrious. He has eyes full of fire, a fine countenance, a nervous body, and very nimble limbs. The beauty of his figure is heightened by a tail resembling

\* The common squirrel has two cutting teeth in each jaw; four toes before, and five behind; a long tail, cloathed with long hair; the ears terminated in long tufts of hair; the eyes are large, lively, and black; the head, body, legs, and tail, are of a bright reddish brown; the breast and belly are white; and the hair on each side of the tail lies flat; *Pennant's synopsis of quad.* p. 279.

In Greek and Latin, *Sciurus*; in Italian, *Schirivolo*, *Chirivolo*, *Schirato*, *Schiratola*; in Spanish, *Harda-esquilo*; in German, *Eychorn*, *Eichbermalin*, in Swedish, *Ikborn*; in Polish, *Wijerwijorka*; in French, *L'Ecureuil*.

*Sciurius*; *Gesner. Hist. of quad.* p. 845.

*Sciurus vulgaris*; *Ray, Synopsis quad.* p. 214.

*Sciurus vulgaris*, auriculis apice barbatis, palmis tetradactylis, plantis pentadactylis; *Linn. Syst.* p. 104.

*Sciurus vulgaris rubicundus*; *Klein. quad.* p. 53.

*Sciurus rufus* quandoque griseo admixto; *Briffon. Regn. anim.* p. 150.

resembling a plume of feathers, which he raises the length of his head, and under which he shades himself from the sun and weather. The under part of his body is furnished with an apparatus equally remarkable, and which indicates strong generative powers. The squirrel partakes less of the nature of quadrupeds than most others of that tribe. He generally rests almost on end, and uses his fore-feet like hands, in carrying his food to his mouth. Instead of concealing himself under the earth, he is perpetually in the air. He approaches the birds by his lightness; and, like the feathered tribes, he dwells on the tops of trees, and traverses the forests by leaping from one tree to another. He likewise builds his nest in the trees, gathers grains and seeds, drinks the dews, and descends not to the earth but when the trees are agitated by storms. He is never found in the open fields, nor in the plains. He approaches not the habitations of men, and never remains among brushwood; but delights in the lofty trees of the forest. Of water he is still more afraid than of the earth; and we are assured, that, when he wants to pass a river or lake, he employs the bark of a tree for a ship, and uses his tail for the rudder and sails\*.

He

\* *Rei veritate nititur quod Gesnerus ex Vincentio Beluancensi et Olao Magno refert, sciuros, quando aquam transire cupiunt, lignum levissimum aquae imponere; eique insidentes, et cauda, non tamen ut vult, erecta, sed continuo mota, velificantes neque flante vento, sed tranquillo aequore transvehi, quod*

He sleeps not, like the dormouse, during the winter, but is at all seasons awake and lively; and, if the foot of the tree where he reposes be touched, he instantly leaves his little nest, and flies to another tree, or shelters himself under a branch. He collects nuts during summer, hides them in the trunks or hollows of old trees, and has recourse to them for his winter food : He likewise searches for them in the snow, and scratches off the surface of it with his feet. His voice is shrill, and still more piercing than that of the martin. When irritated, he makes a murmuring or grumbling noise. He is too light for walking ; his movements consist of little leaps ; and sometimes he makes considerable bounds. His claws are so sharp, and his motions so quick, that he instantaneously climbs beech trees, though their bark be exceedingly smooth.

During the fine summer nights, the squirrels are heard crying, when pursuing each other among the trees. They seem to dread the heat of the sun ; for, during the day, they remain in their nests, from which they issue, in the night, to eat, to frolick, and to make love. Their habitation is clean, warm, impenetrable to rain, and generally situated in the cleft of a tree. They begin the work by carrying small sticks, which

quod fide dignus, fidusque meus emissarius ad insulas Gothlandiae, plus simplice vice observavit, et cum spoliis in littoribus ibidem collectis redux mirabundus mihi retulit ; *Dissert. de Sciuro volante. Phil. Transf. No. 97. pag. 38. Klein. de quad. p. 53.*



which they mix and interlace with moss: They then press and stamp it, to give it firmness and capacity for holding themselves and their young. A small strait aperture only is left near the top, which is hardly sufficient to allow them to pass. Above this aperture is a conical cover which shelters the whole, and makes the rain run off the sides. They generally produce three or four at a litter: The females come in season in the spring, and bring forth in May, or the beginning of June. They cast their hair in winter, and the new fur is redder than the former. They comb and dress themselves with their hands and teeth, are very cleanly, and have no bad smell. Their flesh makes pretty good eating. The hair of their tail is used for pencils; but their skin is only an indifferent fur.

Several species of quadrupeds border upon that of the squirrel; but there are few varieties in the species itself. Some are of an ash-colour; but the greatest number are reddish. The small gray kind is a different species, and continues always gray: And, without mentioning the flying squirrels, the white squirrel of Cambaia\*, which is very small, that of Madagascar†, called *Tsitfibi*, which is gray, and neither beautiful nor easily tamed, the white squirrel of Siam‡, the gray spotted squirrel of Bengal§, the striped squirrel

\* Les voyages de Pietro della Valle, tom. 6. p. 368.

† Le voyage de Flacourt, p. 164.

‡ Le second voyage du P. Tachard, p. 249.

§ Voyages de la Comp. des Indes de Hollande, tom. 7.

squirrel of Canada \*, the black squirrel †, the large gray squirrel of Virginia ‡, the squirrel of New Spain, with white stripes §, the white squirrel of Siberia ||, the variegated squirrel, or *mus ponticus*, the small American squirrel, that of Brasil, that of Barbary, the palm-rat, &c. form so many distinct and independent species of quadrupeds.

## S U P P L E M E N T.

Squirrels should be considered rather as natives of northern regions, than of temperate climates; for they abound so much in Siberia, that immense numbers of their skins are annually sold in that country. The Siberians, says M. Gmelin, take the squirrels in traps, made nearly in the form of a fourth figure, which are suspended on the trees, and baited with a piece of dried fish \*\*.

It was formerly remarked, that there are black squirrels in America. M. Aubry, curate of Saint Louis, has, in his cabinet, a squirrel, sent him from Martinico, which is totally black. It is also distinguished

\* Le voyage de Sagard Theodat, p. 305.

† L'hist. nat. de la Caroline, par Catesby, tom. 2. p. 73.

‡ Ibid. tom. 2. p. 76.

§ Albert Seba, Vol. 1. p. 76.

|| Brisson. Regn. anim. p. 151.

\*\* Voyage de M. Gmelin in Siberie, tom. 2. p. 232.

distinguished from other squirrels by having no hair, or at least a very small quantity, on its ears.

M. de la Borde, King's physician at Cayenne, remarks, that, in Guiana, there is only one species of squirrel, which lives in the woods; that its hair is reddish; that it exceeds not the size of an European rat; that it feeds on the grain of the *Maripa*, *Aoura*, *Comana*, &c.; that it brings forth its young, to the number of two, in the holes of trees; that it bites like a rat; that it is easily tamed; that it makes a kind of low whistling cry; and that it is always seen alone, leaping from branch to branch.

I am not certain that this animal, mentioned by M. de la Borde, is a real squirrel; for these animals, in general, are not found in very warm climates, such as that of Guiana. The species, on the contrary, is very numerous in the cold and temperate regions of both Continents.

'We find,' says M. Kalm, 'several species of squirrels in Pensylvania, where the small kind, called the *ground-squirrel*, is preferred; because, though difficult to tame, it is most handsome. The large squirrels do much mischief to the plantations of maize. They cut the stems, in order to eat the pith. They sometimes come in hundreds into a field, and often devour the whole wheat in a single night. In order to destroy them, a price is put upon their heads. The inhabitants eat the flesh of the squirrels, but put little value on their skins\*.

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\* Voyage de Kalm, tom. 2. p. 245.

‘ The gray squirrels are common in Pennsylvania,  
‘ and in several other parts of North America.  
‘ In figure they resemble those of Sweden; but,  
‘ both in summer and winter, they preserve their  
‘ gray colour, and are likewise somewhat larger.  
‘ They build their nests with moss and straw in  
‘ the hollows of trees. They feed upon the  
‘ fruits of the woods, but prefer the maize. They  
‘ lay up provisions for winter, and remain in  
‘ their magazines during the great colds. These  
‘ animals not only do much injury to the maize,  
‘ but likewise to the oaks, the flowers of which  
‘ they devour, so that the trees produce few a-  
‘ corns. . . . . It is alledged, that they are  
‘ now more numerous in Pennsylvania than for-  
‘ merly, and that they have multiplied in pro-  
‘ portion to the increase of the plantations of  
‘ maize, which is their principal food.’

THE





SQUIRREL.





# T H E R A T \*.

**N**ATURE, by descending gradually from great to small, from strong to weak, counterbalances ever part of her works. Attentive solely to the preservation of each species, she creates a profusion of individuals, and supports by numbers the small and the feeble, whom she hath left unprovided with arms or with courage. She has not only put those inferior animals in a condition to perpetuate and resist by their own numbers, but she seems, at the same time, to have afforded a supply to each by multiplying the neighbouring species. The rat, the mouse, the field mouse, the water-rat, the short tailed

S 2

field-

\* The rat has two cutting teeth in each jaw, four toes before, five behind, and a slender taper tail, naked or very slightly haired. It is of a deep iron gray colour, nearly black; the belly is cineritious, and the legs dusky and almost naked. There is a claw, in place of a fifth toe, on the fore-feet. Its length is seven inches, and that of the tail near eight; *Pennant's Synops. of quad.* p. 299.

In Greek, *Mus*; in Latin, *Mus major*, *Rattus*; in Italian, *Rato di casa*; in Spanish, *Raton*; in German, *Ratz*; in Swedish, *Rotta*; in Polish, *Sczurek*; in French, *Le Rat*.

*Mus domesticus major*, five *rattus*; *Gesner. quad.* p. 731. *Ray, Synops. quad.* p. 217.

*Mus rattus*, cauda elongata subnuda, palmis tetradaetylis, cum unguiculo pollicari, plantis pentadaetylis; *Linn. Syst.* p. 83.

*Mus rattus domesticus*; *Klein. quad.* p. 75.

*Mus cauda longissima*, obscure cinereus; *Briffen. regn. anim.* p. 168.

field-mouse, the fat squirrel, the garden squirrel, the dormouse, the shrew-mouse, and several others, which I mention not, because they do not belong to our climate, form so many distinct and separate species, but so analogous to each other, that, if any one should happen to fail, the gap in the genus would hardly be perceptible. It is this great number of neighbouring species which hath given to naturalists the idea of genera; an idea which can only be employed when we view objects in general, but which vanishes whenever we consider Nature in detail.

Men at first gave distinct names to objects which appeared to differ from each other; and, at the same time, they gave general denominations to objects that seemed to be nearly similar. Among a rude people, and in the infancy of all languages, there is hardly any thing but general terms, or vague and ill-formed expressions for objects of the same order, though very different from each other. An oak, a beech, a linden-tree, a fir, a pine, a yew, would, at first, have no other name but that of a *tree*; afterwards the oak, the beech, and the yew, would all be called *oak*; when these were distinguished from the fir, the pine, and the yew, the three latter would be called *fir*. Particular names could only be invented in consequence of a minute examination of each different species; and the numbers of these names are augmented in proportion to the extent of our knowledge of Nature: The more

we examine her, proper and particular names will become more frequent. When natural objects, therefore, are represented to us, under general denominations, or by classes and genera, it is recalling the darkness peculiar to the infant state of human knowledge. Ignorance is the parent of genera; but science will for ever continue to create and to multiply proper names; and I shall never hesitate in adding to their number, as often as I have occasion to delineate different species.

Several species of small animals have been confounded under the generic name of *Rat*: But we shall confine this name solely to the common rat, which is of a blackish colour, and inhabits the habitations of men. The rat commonly frequents granaries and barns, and from thence, when food is scarce, comes into our houses. He is a carnivorous, or rather an omnivorous animal: He seems only to prefer hard substances to those which are tender or succulent. He gnaws linen, cloths, furniture, makes holes in the walls, lodges in the ceilings, and in the void spaces between the wall and the wainscoting. From these lurking places the rats issue in quest of food, and transport thither every substance they can drag, forming considerable magazines, especially when they have young to provide for. The female brings forth several times a-year, but always in the summer season. The litter generally consists of five or six. They

are fond of warmth, and, in winter, insinuate themselves near the chimneys, or lodge among hay or straw: In spite of cats, poison, and snares these animals multiply so greatly, that they often do much damage. In old country-houses where grain is kept, and where the vicinity of barns and magazines of hay facilitates their retreat, they often increase so prodigiously, that the possessors are obliged to remove and desert their habitations, unless the rats happen to destroy each other. It is well known, that rats, when pinched for food, eat one another. When a famine is created by too great a number being crowded into one place, the strong kill the weak, open their heads, and first eat the brain, and then the rest of the body. Next day, the war is renewed, and continues in the same manner till most of them are destroyed. This is the reason why these animals, after being extremely troublesome, disappear all of a sudden, and return not for a long time. The same thing happens to field-mice, whose prodigious multiplication is interrupted only by the hostilities they exercise on each other, when provisions become scarce. This sudden destruction is ascribed by Aristotle to the operation of rains. But rats are not exposed to rain, and the field-mice know how to guard themselves against its effects; for the holes they inhabit are not even moist.

The rats are as lascivious as they are voracious: They squeak during their amours, and cry when



when they fight. They prepare a bed for their young, and soon learn them to eat. When the young begin to issue from their hole, the mother watches, defends, and even fights with the cats, in order to save them. A large rat is more mischievous, and nearly as strong as a young cat. The fore-teeth of the rat are long and strong: The cat is not a good biter; and, as she uses her claws only, she requires to be both vigorous and accustomed to fight. The weasel, though smaller, is a more dangerous and formidable enemy, because he follows the rat into his hole. Their strength being nearly equal, the combat often continues long: But the method of using their arms is very different. The rat wounds only by reiterated strokes with his fore-teeth, which are rather destined for gnawing than biting; and, being situated at the extremity of the lever, or jaw, they have not much force. But the weasel bites cruelly with the whole jaw, and, instead of quitting his hold, he sucks the blood from the wounded part; and, therefore, the rat uniformly falls a sacrifice to the weasel.

Of this species, as in all those which consist of numerous individuals, there are many varieties. Beside the common rat, which is blackish, some are brown, others gray, reddish, and even totally white. The white rats have red eyes, like the white rabbit, the white mouse, and all the other animals which are perfectly white. The whole species, and its varieties, appear to be natives of the temperate

temperate climates, and are more diffused over the warm than the cold regions. There were no rats originally in America\*; but those imported from Europe multiplied so prodigiously, that they were long the scourge of the colonies, where they had no enemies but large serpents, which swallowed the rats alive. They have been carried by ships into the East Indies, and all the islands of the Indian Archipelago†; and are found likewise in Africa‡. But, towards the north, they have never multiplied beyond Sweden; for what are called Norwegian and Lapland rats, are animals of a different species.

## S U P P L E M E N T.

Pontoppidan remarks, ‘ that neither the wood  
 ‘ nor water rats can live farther north than Nor-  
 ‘ way; that there are several districts, as that of  
 ‘ Hordenver in the diocese of Bergen, and others  
 ‘ in the diocese of Aggerhum, where no rats are  
 ‘ to be found; and that the rats on the south  
 ‘ banks of the river Vormen soon perish when  
 ‘ carried

\* See la descript. des Antilles par le P. du Tertre, tom. 2. p. 303. L’hist. nat. des Antilles, p. 261. Nouveaux voyages aux îles de l’Amérique, tom. 3. p. 160. Dampier, tom. 4. p. 225.

† Lettres edifiantes, recueil 18. p. 161.

‡ Voyage de Guinée par Bosman, p. 241. L’hist. gen. des voyages par M. l’Abbé Prevôt, tom. 4. p. 238.

‘carried to the north side of it. This difference,’ he adds, ‘can only be ascribed to certain exhalations of the soil, which are destructive to these animals.’ These facts may be true: But we have often discovered that Pontoppidan is an author who deserves not entire credit.

M. le Vicomte de Querhoënt has favoured me with the following remarks: That the rats, transported from Europe to the Isle of France, increased to such a degree, that, it is alledged, they made the Dutch leave the island. The French have diminished the number, though great quantities of them still remain. Some time, adds M. de Querhoënt, after a rat resides in India, he acquires so strong a smell of musk, that he scents every thing for a considerable space round his habitation; and it is alledged, that, when he comes near wine, he makes it turn sour.—This Indian rat appears to be the same which the Portuguese call *Cherofso*, or odoriferous rat. La Boullaye-le-Gouz says, ‘that it is very small, and nearly of the figure of the ferret; that its bite is venomous; that its smell is immediately perceived when it enters a chamber; and that it cries *kric, kric, kric* \*.’

This rat is likewise found in Madura, where it is called the *scented rat*. It is mentioned by the Dutch voyagers, who tell us, that its skin is as fine as that of the mole, but not so black †.

T H E

\* Voyage de la Boullaye-le-Gouz, p. 256.

† Recueil des voyages qui ont servi à l’établissement de la Comp. des Indes Orient. tom. 2. p. 275.

## T H E M O U S E \* .

**T**HE Mouſe is much ſmaller, equally numerous, and more generally diffuſed than the rat. It has the ſame inſtinct, the ſame conſtitution and natural diſpoſitions, and differs only by its weakneſs, and the habits which reſult from this circumſtance. Timid by Nature, and familiar from neceſſity, fear and want are the ſources of all his movements. He never iſſues from his hole but in queſt of food, and runs in again upon the ſmalleſt alarm. He goes not, like the rat, from houſe to houſe, unleſs he be forced; and he is not near ſo deſtructive. His manners are gentle, and he may be tamed to a certain degree; but he never

\* An animal that needs no deſcription; when found white, it is very beautiful, the full bright eye appearing to great advantage amidſt the ſnowy fur; *Pennant's Synopf. of quad. p. 302.*

In Greek, *Μυρνος*; in Latin, *Mus, Musculus, Sorex*; in Italian, *Topo, Sorice, Sorgio di caſa*; in Spaniſh, *Rat*; in German, *Muſz*; in Swediſh, *Mus*; in Poliſh, *Myſſ*; in French *La Souris*.

*Mus domesticus communis, vel minor*; *Gefner. Icon. animal. quad. p. 114.*

*Mus domesticus vulgaris, ſeu minor*; *Ray, Synopf. animal. quad. p. 218.*

*Mus musculus, cauda elongata, palmis tetradaſtylis, plantis pentadaſtylis*; *Lynn. Syſt. p. 83.*

*Mus minor, musculus vulgaris domesticus, cauda tereti longa*; *Klein. hiſt. nat. quad. p. 57.*

*Mus cauda longiſſima, obſcure cinereus, ventre ſubalbacente*; *Briffon, Regn. anim. p. 169.*



ver discovers the smallest attachment to his benefactors. It is not, indeed, easy to love those who are perpetually laying snares for us. Though weak, the mouse has many enemies, from whom he has no means of escape, but those of agility and minuteness. Owls, birds of prey, cats, weasels, and even rats, make war upon the mice. They are shot, caught in traps, and destroyed by millions. In a word, they subsist by their amazing fecundity alone.

They bring forth at all seasons, and several times in the year. The litter generally consists of five or six. In less than fifteen days, the young are strong enough to disperse and to procure food for themselves. The duration of life in those small animals must, therefore, be short, since their growth is so rapid; and this circumstance still farther augments the idea of their prodigious multiplication. Aristotle tells us, that, having shut up a pregnant mouse in a vessel, along with plenty of grain, he, in a short time after, found 120 mice, all sprung from the same mother.

These little animals are by no means ugly; they have a vivacious and elegant air. That species of horror which some people feel at them, arises from the surprise and inconveniencies they sometimes occasion. All mice are whitish under the belly, and some are altogether white. Others are more or less brown and black. The species is generally diffused over Europe, Asia, and Africa; and,



and, it is alledged, that those of America, where they are very numerous, came originally from the Old Continent. It is, however, certain, that this little animal follows man, and flies from uninhabited places, probably on account of its natural appetite for bread, cheese, butter, oil, and other aliments which men prepare for themselves.

### S U P P L E M E N T.

White mice, with red eyes, are found not only in our temperate climates, but in the southern and northern regions of both Continents. 'White mice, with red eyes,' says Pontoppidan, 'have been found in the small village of Rams-dallem; but, whether they are indigenous, or brought from the East-Indies, is uncertain.' This last supposition seems to have no foundation; for it is natural to expect white mice in Norway, as well as every where else in Europe; and mice, in general, are equally numerous in America as in the Old Continent.'

The

## The Long-tailed FIELD-MOUSE \*.

**T**HIS animal is less than the rat, and larger than the mouse. It never lives in houses, but is found in the fields and woods. Its eyes are remarkably large and prominent; and it differs still more from the rat and mouse, by the colour of its hair, which is whitish under the belly, and of a reddish brown on the back. It is very generally and copiously diffused, especially in elevated countries. It seems to take a considerable time in arriving at full growth, because it varies greatly in size. The largest are between four and five inches long; and the smaller ones, which appear likewise to be adults, are an inch shorter. And, as we find them of all intermediate sizes, both the great

\* This animal has full black eyes; its head, back, and sides are of a yellowish brown, mixed with some dusky hairs; the breast is of an ochre colour; and the belly is white: Its length, from the tip of the nose to the tail, is four inches and a half, and that of the tail, which is slightly covered with hair, is four inches; *Pennant's Synops. of quad. p. 302.*

*Mus agrestis major, macrouros Gesneri; Ray, Synops. quad. p. 219.*

*Mus cauda longa, supra e fusco flavescens, infra ex albo cinerescens; Brisson. quad. p. 123.*

*Mus domesticus medius; Ray, Synops. quad. p. 218.*

*Mus sylvaticus, cauda longa, palmis tetradactylis, plantis pentadactylis, corpore griseo pilis nigris, abdomine albo; Linn. Syst. nat. p. 84.*

*Le Mulot; Buffon.*

great and small are unquestionably the same species. Ignorance of this fact has, probably, led some naturalists to make two species of them, the one called *the great field-rat*, and the other *the field-mouse*. Ray, who first fell into this blunder, seems to acknowledge that he knew but one species\*. And, though the short descriptions he has given of each species appear to differ, we ought not to conclude that both exist: 1. Because he himself knew but one. 2. Because, after all the researches I have made, I have not been able to discover more than one kind; because Gesner, and other naturalists, mention one species only, under the name of *mus agrestis major*, which they say is very common; and because Ray says that the other kind, called *mus domesticus medius*, is also very common: Hence, it is apparent, that none of these authors have ever seen both kinds, since they acknowledge both to be very common. 3. Because, in this single species, individuals are found of a larger and lesser size, this circumstance might lead them to consider the small as of one species, and the larger of another. Lastly, because the descriptions are too vague and inaccurate to establish a specific difference.

The ancients, indeed, mention two species, the one under the denomination of *mus agrestis major*, the other under that of *mus agrestis minor*. These two species are very common, and we know them

\* De hac specie mihi non undequaue satisfactum est; Ray, *Synops. quad.* p. 219.

them as well as the ancients: The first is our long-tailed field-mouse: the second is not the *mus domesticus medius* of Ray, but another animal, known by the name of the *short-tailed field-mouse*, or *little field-rat*. And, as it differs both from the rat and the long-tailed field-mouse, I have given it its Italian name, *compagnoli* or *compagnol*.

The long-tailed field-mouse, as I formerly remarked, lives in dry and elevated grounds. In the woods and adjacent fields they are found in vast numbers. They retire into holes among the brushwood and under the trunks of trees, where they amass great quantities of acorns, nuts, and beech-mast; sometimes a whole bushel is found in a single hole; and this hoard is not proportioned to the wants of the animal, but to the capacity of the place where it is deposited. These holes are generally more than a foot under ground, and often divided into two apartments, the one for living in along with their young, and the other for a magazine. I have frequently seen great damage done to the plantations by these animals. They carry off the new sown acorns; by following the furrow of the plough, they dig up one after another, not leaving a single seed. This happens chiefly in those seasons when the acorns are scarce: Not finding enough in the woods, they come in quest of them in the cultivated fields, and do not eat them on the spot, but transport them to their holes, where they amass such quantities,



tities, that they often corrupt. These creatures alone do more mischief in a nursery of trees than all the birds and other animals put together. The only way to prevent this damage is, to lay traps at ten paces asunder through the extent of the sown ground. No other apparatus is necessary than a roasted walnut placed under a flat stone, supported by a stick. The animals come to eat the walnut, which they prefer to acorns; and, as the walnut is fixed to the stick, whenever they touch it, the stone falls and crushes them to death. I have used the same expedient for the destruction of the short-tailed field-mouse, which likewise destroys acorns. When I began this operation, I desired all the mice that were caught by the traps to be brought to me, and found, with astonishment, that above 100 were taken each day, from a piece of ground consisting only of about 40 French arpents. From the 15th of November to the 8th of December, above 2000 were slain in this manner. Their numbers gradually decreased till the frost became severe, when they retire to their holes, and feed upon the magazines they have collected. It is more than 20 years since I made this trial, which I always repeated when I sowed tree-seeds, and never failed to catch vast quantities of these mice. They abound chiefly in autumn; their numbers being much less in the spring: For, if provisions fail during the winter, the strong devour the weak. The long-tailed field mice likewise eat the short-tailed species, and even



even thrushes, blackbirds, and other birds which they find entangled in snares. They first eat the brain, and then the rest of the body. I once kept a dozen of these mice in a cage, and furnished them with food every morning at eight o'clock. One day they were neglected for about a quarter of an hour, when one of their number was eaten up by the rest; next day another suffered the same fate; and, in a few days, one only remained: All the others had been killed, and partly devoured; and even the survivor himself had his feet and tail mutilated.

The rat is very prolific; but the long-tailed field-mouse is more so. The latter brings forth more than once a year, and the litters often consist of nine or ten, while those of the rat never exceed five or six. In one hole I have found two mothers and twenty young. This animal is very generally diffused over Europe. It is found in Sweden, and is called by Linnaeus \* *mus cauda longa, corpore nigro flavescente, abdomine albo*. It is very common in France, Italy, and Switzerland: Gesner calls it *mus agrestis major* †. The species is also numerous in Germany and in Britain, where it is called the *field-mouse*. It has for enemies, wolves, foxes, weasels, birds of prey, and its own species.

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\* Faun. Suec. p. 11.

† Gesner, quad. p. 733. Icon. quad. p. 116.

## The WATER-RAT\*.

**T**HIS animal is about the size of a rat ; but, from its manners and dispositions, has a much greater resemblance to the otter than to the common rat. Like the otter, it frequents the fresh water, and is found in the margins of rivers, brooks, and pools, and lives mostly on fishes. Gudgeons, minnows, blays, and the fry of carps, pikes, and barbels, are his ordinary food. He

\* Rat with a thick blunt nose ; ears hid in the fur ; eyes small ; teeth yellow : On each foot five toes ; inner toe of the fore foot very small ; the first joint very flexible : Head and body covered with long hairs, black mixed with a few ferruginous hairs ; belly of an iron gray ; tail covered with short black hairs, the tip whitish : Weight nine ounces ; length, from nose to tail, 7 inches ; tail only 5 ; *Pennant's Synops. of quad.* p. 301.

In Latin, *Mus aquaticus*, *Mus aquatilis* ; in Italian, *Sorgo morgange* ; in German, *Wasser-musz* ; in Polish, *Myś wódna* ; in French, *Le Rat d'eau*.

*Mus aquaticus* ; *Gesner. Hist. quad.* p. 732.

*Mus aquatilis*, quadrupes Belloni ; *Icon.* p. 354.

*Mus aquaticus major*, five *rattus aquaticus* ; *Ray, synops. quad.* p. 317.

*Mus amphibius*, cauda elongata pilosa, plantis palmatis ; *Lynn. fyst. nat.* p. 82.

*Mus rattus aquatilis* ; *Klein. quad.* p. 57.

*Mus cauda longa*, pilis, supra ex nigro et flavescente mixtis, infra cinereis vestitus. *Mus aquaticus* ; *Briffon. Regn. anim.* p. 175.

He likewise eats frogs, water insects, and sometimes the roots of plants. He has not, like the otter, membranes between his toes. This error has been copied from Willoughby by Ray and other naturalists. Though all his toes be separate, he swims with ease, keeps long under the water, and carries off his prey to be devoured upon the grass, or in his hole. He is sometimes surprised by fishers when searching for craw-fish; and he endeavours to escape by biting their fingers, or leaping into the water. His head is shorter, his muzzle thicker, his hair more bushy, and his tail much shorter, than those of the rat. Like the otter, he avoids large rivers, or rather those which are much frequented. He never visits houses or barns, but keeps upon the margins of waters, from which he wanders not upon dry land so far as the otter, which is sometimes found at the distance of a league from water. Water-rats are seldom met with in elevated places, or in dry plains, but are extremely numerous in moist and marshy valleys. The females come in season about the end of winter, and bring forth in the month of April, the litter generally consisting of six or seven. Perhaps they bring forth more than once a year; but of this we have no proper knowledge. Their flesh is not intollerably bad, being eaten by the peasants, as well as that of the otter, during the season of Lent. They are found every where over

Europe, except in the polar regions. If we may credit Bellon, they inhabit the banks of the Nile: However, the figure he gives of them has so little resemblance to our water-rat, that it is probable the Nile rats form a different species of animals.

The

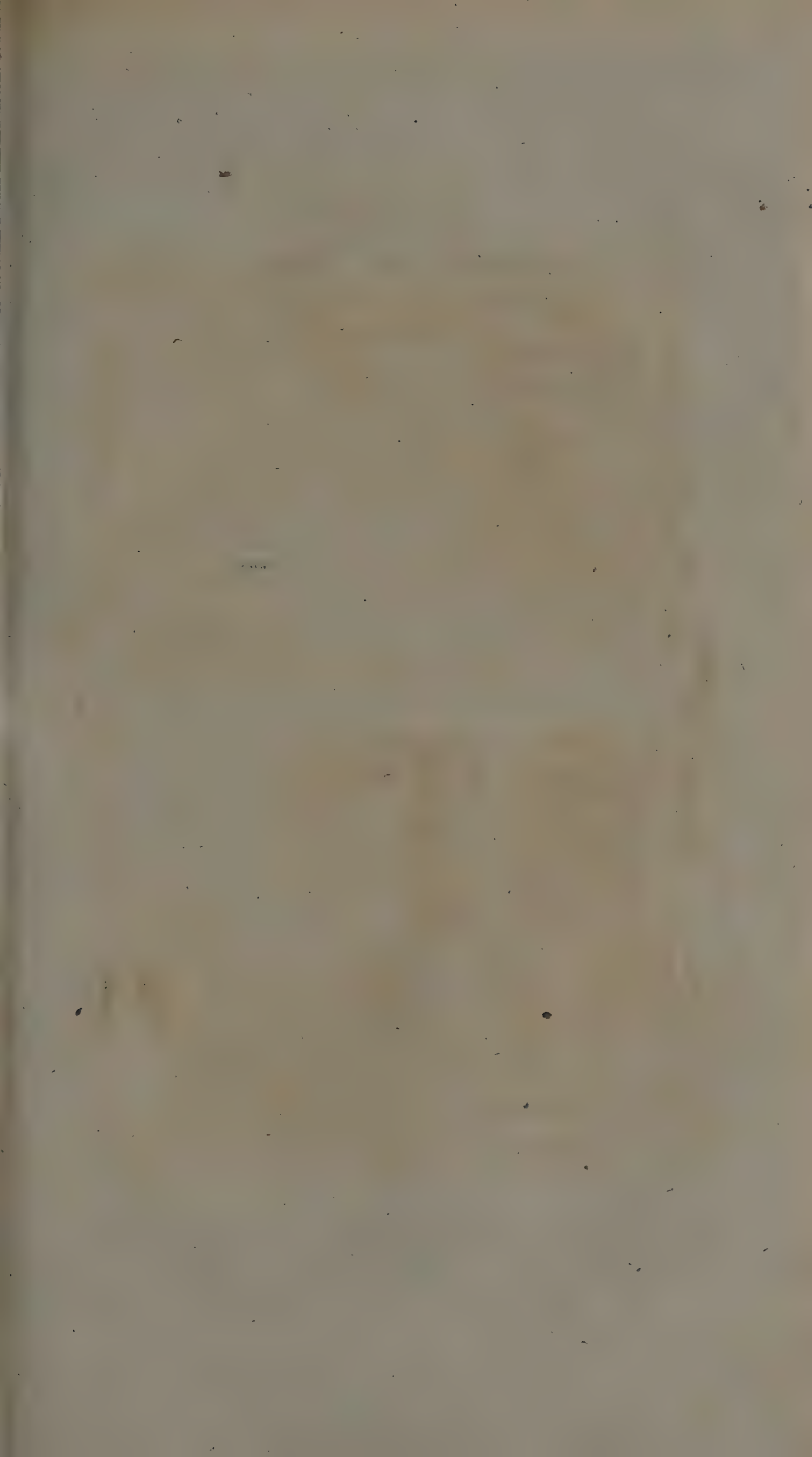
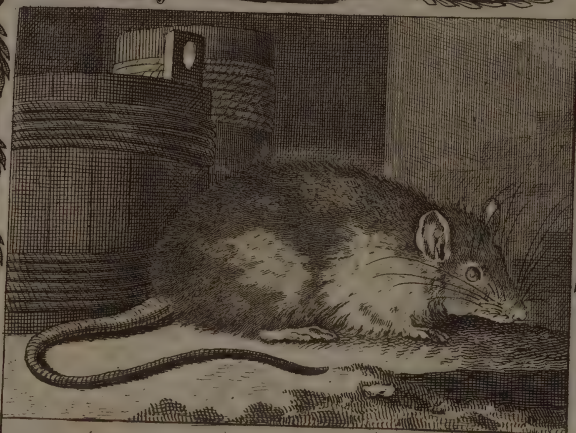




Plate LXXXIV.



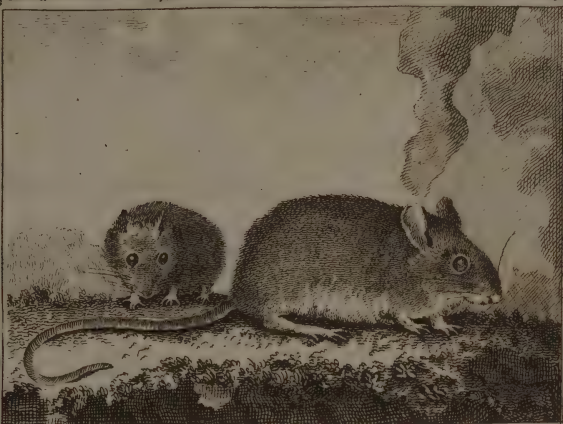
RAT.



*A Bell Sculp.*

MOUSE.

Plate LXXXV.

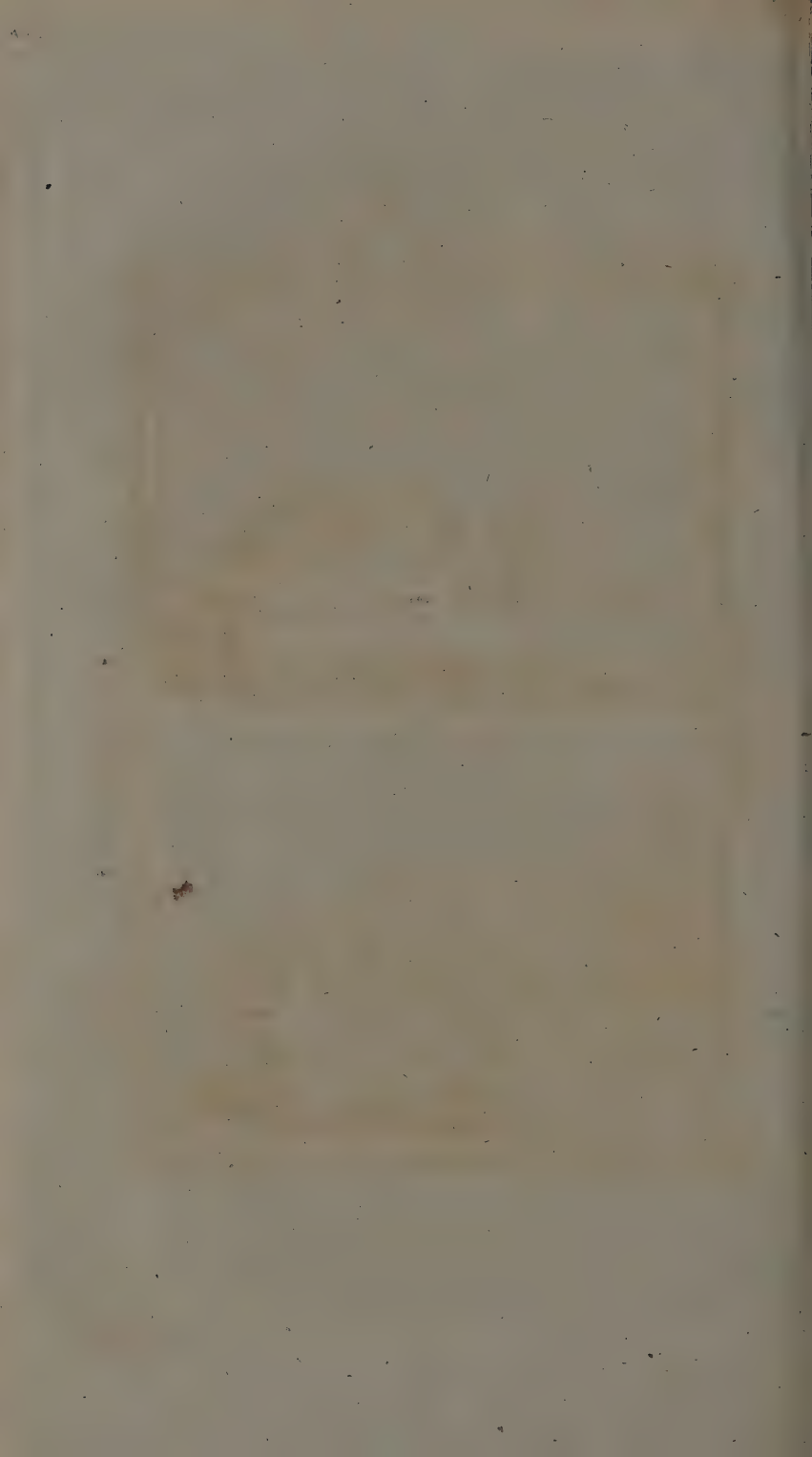


LONG TAILD FIELD MOUSE.



*A Bell's sculp. t.*

WATER RAT.



## The Short-tailed FIELD-MOUSE.

**T**HE Short-tailed Field-mouse is still more common and more generally diffused than the long-tailed kind. The latter never appears in high grounds ; but the former is found every where, in the woods, the fields, the meadows, and even in the gardens. It is remarkable for the thickness of its head, and the shortness of its tail, which exceeds not an inch in length. It digs holes in the earth, where it amasses grain, filberts, and acorns : But it appears to prefer corn to every other food. In the month of July, when the grain is ripe, the short-tailed field-mice assemble from all quarters, and often do great da-

T 3 mage

\* This animal has a large head, a blunt nose, short ears hid in the fur, prominent eyes, and a short tail : The colour of the head and upper part of the body is ferruginous, mixed with black, and the belly is of a deep ash-colour. The length of the body, from tail to nose, 6 inches, and that of the tail, which is thinly covered with hair, and terminated by a small tuft, one inch and a half ; *Pennant's Synops. of quad. p. 305.*

*Mus agrestis minor* ; *Gesner. quad. p. 733. Icon. quad. p. 116.*

*Mus agrestis capite grandi, Brachiuros* ; *Ray, Synops. quad. p. 218.*

*Mus terrestris, cauda mediocri subpilosa, palmis subtetradactylis, plantis pentadactylis, auriculis vellere brevioribus* ; *Linn. Syst. p. 82.*

*Mus agrestis capite grandi* ; *Klein. quad. p. 57.*

*Mus cauda brevi, pilis e nigricante et sordide luteo mixtis, in dorso, et saturate cinereis in ventre, vestitus.*—*Mus campestris minor* ; *Briffon. Regn. anim. p. 176.*

Campagnol, Mulot à courte queue, petit rat des champs ; *Buffon.*



mage by cutting the stalks of the corn, in order to come at the ears. They follow the reapers, and eat up all the fallen or neglected grain. When the gleanings are devoured, they flock to the new-sown fields, and prematurely destroy the crop of the ensuing year. In winter, most of them retire into the woods, where they feed upon filberts, acorns, and the seeds of trees. In particular years, they appear in numbers so immense, that they would destroy every thing, if they continued long: But they always kill and eat one another during a scarcity of provisions. They, besides, become the prey of the long-tailed field-mouse, the fox, the wild cat, and the weasels.

In its internal structure, this animal resembles the water rat more than any other; but differs from him externally by several essential characters: 1. By the size; the short-tailed field-mouse is not above three inches long; but the water-rat is seven inches: 2. By the dimensions of the head and body, those of the former being proportionally thicker than those of the latter: 3. By the length of the tail, which, in this field-mouse, exceeds not a third of the length of the animal's body; but the length of the tail of the water-rat is near two thirds of its body: Lastly, By its manners and dispositions: It feeds not upon fishes, nor goes into water, but nourishes itself with acorns, grain, and tuberous roots, such as those of the dandelion, &c. Their holes resemble those  
of





SHORT TAILD FIELD MOUSE.



of the long-tailed field mouse, and are often divided into two apartments ; but they are neither so spacious nor so deep. Several of them frequently live together. When the females are about to bring forth, they make beds of herbs for their young. They produce in spring and summer, and the litter generally consists of five or six, and sometimes of seven or eight.

THE

## THE GUINEY PIG\*.

**T**HIS little animal, though a native of Brazil and of Guiney, lives and propagates in the temperate, and even in the cold climates, when protected from the inclemency of the seasons. Though Guinea-pigs multiply prodigiously in France, their numbers are never great; because the care they require is not compensated by the profits arising from them. Their skin is hardly of any value, and their flesh, though eatable, is not

\* The *restless cavy* has two cutting teeth in each jaw; generally four toes on the fore-feet, and three behind, short ears, and no tail, or a very short one: The upper lip is half divided; the ears are very large, broad, and rounded at the sides: The hair is erect, and not unlike that of a young pig: The colour is white, or white variegated with orange and black, in irregular blotches; *Pennant's Synops. of quad.* p. 243.

In Brazil, it is called *Cavia Cobaya*; in German, *Indianisch Kiinele*, *Indisch Seile*, *Meer-ferchel*, *Meer-Schwein*; in Swedish, *Merfwyn*; in Polish, *Swinka Zamorska*.

*Cavia Cobaya*; *Pison. Hist. Nat.* p. 102.

*Cuniculus Indus*; *Gesner, Icon. quad.* p. 106.

*Mus*, seu *cuniculus Americanus* et *Guineensis*, *porcellipilis* et voce, *Cavia Cobaya Brasiliensibus* dictus; *Ray, Synops. quad.* p. 223.

*Mus porcellus*, cauda nulla, palmis *tetradactylis*, plantis *tridactylis*; *Linn. Syst.* p. 79.

*Cavia Cobaya Brasiliensibus*, quibusdam *mus Pharaonis*, tatu pilosus, *porcellus*, *mus Indicus*; *Klein. quad.* p. 49.

*Cuniculus ecaudatus*, auritus, albus aut rufus, aut ex utroque variegatus; *Cuniculus Indicus*; *Briffon. Regn. anim.* p. 147.

not so good as to be much demanded ; but it might be improved, by keeping them in warrens, where they would have the benefit of fresh air, and the liberty of choosing herbs agreeable to their taste. Those kept in houses have nearly the same bad taste with warren-rabbits ; and those kept in gardens during summer have an insipid, but less disagreeable flavour.

The temperament of these animals is so hot and premature, that they copulate five or six weeks after their birth. They acquire not, however, their full growth before the 8th or 9th month. But this increase of size consists only of fat ; for the solid parts are fully unfolded before the age of six months. The females go with young only three weeks ; and I have known them bring forth at the age of two months. The first litter consists of four or five ; the second of five or six ; and the succeeding ones of seven or eight, and sometimes of ten or twelve. The mother suckles her young twelve or fifteen days ; she banishes them as soon as she receives the male, which happens, at farthest, three weeks after her delivery ; and, if any of them persist in following her, they are maltreated and slain by the father. Thus these animals produce at least every two months ; and, as their young bring forth in the same space, we are astonished at their rapid and numerous multiplication. From a single couple we may have 1000 in one year. But their destruction is as rapid as their propagation. They  
are



are killed by cold and by moisture ; they allow themselves, without resistance, to be eaten by the cats ; even the mothers defend not their young from their destroyers ; not having time to form an attachment to their young, they make no efforts to save them. The males are still less solicitous about their offspring, and even allow themselves to be devoured, without resistance. They seem to have no distinct sentiment, but that of love. When under the influence of this passion, they are susceptible of anger, fight cruelly, and even kill each other in disputing the possession of a female. They pass their lives in sleeping, eating, and amours. Their sleep is short, but frequent ; they eat every hour, both day and night ; and they indulge in mutual embraces as often as they eat. Though perpetually throwing out urine, they never drink. They feed on all kinds of herbs, but especially on parsley, which they prefer to grain or to bread. They are likewise fond of apples and other fruits. They eat precipitantly, like the rabbit, little at a time, but very often. They make a kind of grunting noise, similar to that of a young pig. A kind of chirping noise marks the time of their amours, and they raise a sharp cry when they feel pain. They are extremely delicate, and so impatient of cold, that it is difficult to preserve them through the winter. They must be kept in a dry, warm, wholesome place. When they feel cold, they assemble and crowd close together ; and they often  
all

Platé LXXXVII.



*A. Bell's sculp.*

GUINEY PIG.



all perish in this situation. By Nature they are gentle and tame. They do no mischief; but they are equally incapable of good; for they never form any attachments. Mild by constitution, docile through weakness, almost insensible to every object, they have the appearance of living machines constructed for the purposes of propagation, and of representing a species.

THE

## THE HEDGE-HOG\*.

**Π**ολλ' οἶδ' αλωπῆε, ἀλλ' ἐχῖνος ἐν μεγα : ' That the fox knows many things, and the hedge-hog but one important thing,' is a proverbial saying of the ancients †. The hedge-hog knows how to defend himself without fighting, and to wound without making an attack. Having little strength, and less agility for flight, he has received from Nature

\* This animal has five toes on each foot; and its body is covered with short spines. Its nose is long; the nostrils are bordered on each side with a loose flap; the ears rounded, broad, and naked; the eyes small; the legs short, naked, and dusky; the inner toe is shortest, and the claws are weak; the upper part of the face, the sides and rump, are covered with strong coarse hair of a yellowish and cinereous colour; the back with strong short spines of a whitish colour, with a bar of black through their middle: The tail is an inch long; and the length of the body, from tail to nose, is ten inches; *Pennant's Synops. of quad.* p. 316.

In Greek, ἐχῖνος; in Latin, *Echinus, Herinaceus, Erinaceus, Echinus terrestris*; in Italian, *Erinaceo, Riccio, Aizzo*; in Spanish, *Erizo*; in Portuguese, *Ourizo, Orica cachero*; in German, *Igel*; in Swedish *Igelkott*; in Danish, *Pind Swin*; in Polish, *Jez, Ziennay*; in Dutch, *Yeren Vereken*; in French, *Le Herisson, Eurchon*.

*Echinus terrestris*; *Gesner, quad.* p. 368.

*Herinaceus*; *Gesner. Icon. quad.* p. 106.

*Echinus* sive *Erinaceus terrestris*; *Ray, Synops. quad.* p. 231.

*Erinaceus Europeanus, auriculis rotundatus, naribus cristatis*;

*Linn. Syst.* p. 75.

*Acanthion vulgaris nostras, Herinaceus, Echinus*; *Klein. quad.* p. 66.

*Erinaceus auriculis erectis*; *Briffon. Regn. animal.* p. 181.

† Zenodotus, Plutarchus, et alii ex Archilochos.



Nature a spinous armour, with the faculty of rolling himself up like a ball, and of presenting on all sides those sharp weapons, which repel the enemy. The more he is harassed, he rolls himself up the closer. His fears tend still farther to defend him; for, by throwing out his urine, the smell and humidity of which spreads over his whole body, he completely disgusts the enemy. Thus most dogs content themselves with barking, and never choose to seize the hedge-hog. The fox, however, accomplishes his end by wounding the animal's feet, and making the blood run into its mouth. But the hedge-hog is proof against the weasel, the martin, the polecat, the ferret, and birds of prey. From the head to the tail, both male and female are equally covered with spines, and the under parts of their bodies only are garnished with hair. But those arms, which are so useful to them in defending against enemies, become exceedingly inconvenient when they want to unite. They cannot copulate in the manner of other quadrupeds, but face to face, either on end or lying. The females come in season in the spring, and bring forth in the beginning of summer. I have frequently had the mother and her young brought to me in the month of June. The litter generally consists of three or four, and sometimes of five. When very young, they are white, and the buds of the spines are only visible through the skin. I tried to rear some of them, by putting the mother and her young in a barrel, with  
plenty

plenty of provisions: But, instead of suckling, she devoured them one after another. This was not the effect of hunger; for she eat bread, meat, and fruits. One would never have imagined that an animal so slow and indolent, could be so impatient of confinement. It even possesses the same species of malevolence with that of the monkey. A hedge-hog that had slipped into the kitchen, took the meat out of a small kettle, and defiled it with his ordure. I kept males and females in a room together; but, though they lived, they never coupled. I left several of them in my gardens, where they did so little mischief, that it could hardly be perceived. They live upon fallen fruits; and dig the earth to a small depth with their noses. They eat may-bugs, beetles, grasshoppers, worms, and some roots. They are likewise fond of flesh-meat, which they devour either raw or roasted. In the country, they are frequently found in the woods, under the trunks of old trees, in the cliffs of rocks, and particularly among the stones collected upon the fields and vineyards. I am uncertain whether they climb trees, as some naturalists assert \*, or use their spines for transporting fruits or grapes. They seize with the mouth every thing they eat; and, though they abound in our forests, they have never been discovered upon trees, but are always found in holes or under the moss. They stir

\* *Arbores ascendit, poma et pyra decutit, in istis sese volutat ut spinis haereant; Sperling. Zoologia, p. 281.*

stir not during the day, but go about the whole night. They approach not the habitations of men ; but, though they sometimes appear in the meadows, they prefer dry and elevated grounds. They are taken by the hand, never fly, nor defend themselves with their feet or their teeth ; but, when touched, they roll up in the form of a ball, and will not extend themselves, unless they be plunged in water. They sleep during the winter ; and, therefore, the provisions they are said to amass in summer, would be entirely useless to them. They eat little, and can live long without food. Their blood is as cold as that of those other animals who sleep during winter. Their flesh makes not good eating ; and their skin, of which no use is now made, was formerly employed for heckling hemp.

Some authors mention two species of hedgehog, one with a snout like a hog, and the other with a muzzle resembling that of a dog. But I know one species only, of which there are even no varieties in our climates. The hedge-hogs are very generally diffused : They are found every where in Europe, except in the cold regions of Norway, Lapland, &c. There are hedge-hogs, says Flacourt \*, in Madagascar, and they are called *Sora*. The hedge-hog mentioned by Tachard † seems to be another animal ; and the

hedge-

\* Voyage de Flacourt, p. 152.

† Le second voyage du P. Tachard, p. 272.

hedge-hogs of America \*, and of Siberia †, are the species which approach nearest to that of the common kind. Lastly, the hedge-hog of Malacca ‡ seems to come nearer the porcupine than the hedge-hog.

T H E

\* *Echinus Indicus albus*; *Ray, Synops. quad.* p. 232. *Echinus Americanus albus*; *Albert Seba, vol. 1.* p. 78. *Acanthion echinatus*, *Erinaceus Americanus albus Surinamensis*; *Klein. quad.* p. 66.

† *Erinaceus Sibericus*; *Albert Seba, vol. 1.* p. 66.

‡ *Porcus aculeatus seu Histrix Malaccensis*; *Albert Seba, vol. 1.* p. 81. *Acanthion aculeus longissimis*; *Histrix genuina*; *Porcus aculeatus Malaccensis*; *Klein. quad.* p. 66. *Histrix Malaccensis, auriculis pendulis*; *Linn. Syst.* p. 75. *Erinaceus auriculis pendulis*; *Briffon. Regn. anim.* p. 183.

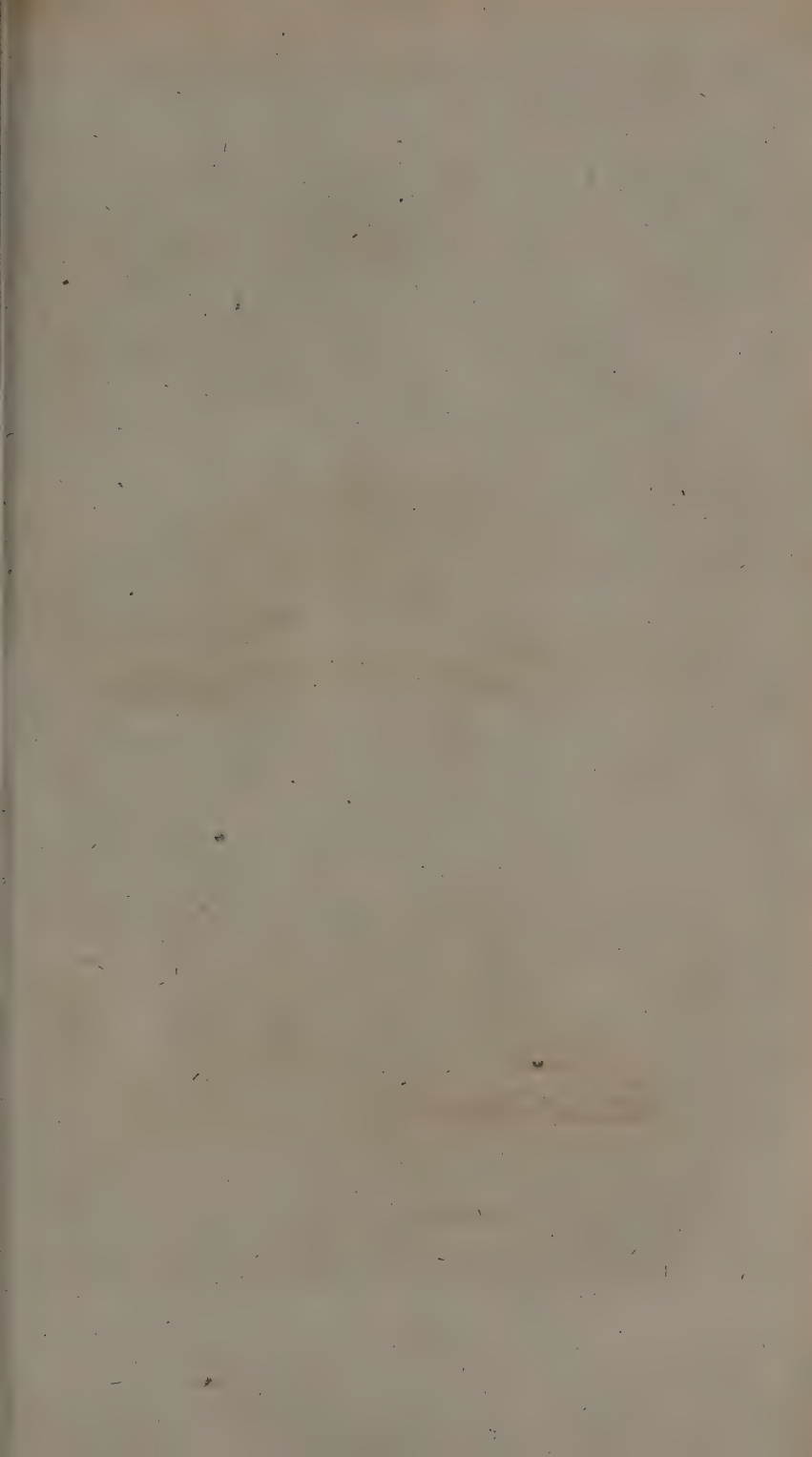




Plate LXXXVIII.



*A. Bell's sculp.*

HEDGE HOG.

# THE SHREW MOUSE\*.

**T**HE Shrew Mouse seems to form a link in the chain of small animals, and to fill the interval between the rat and the mole, which, though they resemble each other in size, differ greatly in figure, and are very distant species. The shrew is still smaller than the mouse, and has

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\* The shrew mouse has two cutting teeth in each jaw, pointing forward, a long slender nose, small rounded ears, and five toes on each foot. The eyes are small, and almost hid in the fur; the nose is long and slender, the upper part being longest; the head and upper part of the body are of a brownish red colour, and the belly of a dirty white. The length of the body, from tail to nose, two inches and a half, and that of the tail one inch and a half; *Pennant's Synops. of quad. p. 307.*

In Greek *Μυγαλη*; in Latin, *Mus araneus*, *Mus caecus*; in Italian, *Toporagno*; in Spanish, *Murganbo*; in German, *Müger*, *Spignus*, *Zismus*, *Spitzmaus*, *Haselmaus*; in Swedish, *Nabbus*; in Polish *Keret*; in Silesia, *Bisem-mus*; among the Grisons, *Mufarring*, in Swiss, *Mütrer*; in Savoy, *Muset* *Mufette*; in French, *La Musaraigne*, *Muserain*, *Muzeraigne*, *Muset*, *Musetre*, *Sery*, *Sri*.

*Mufaraneus*; *Gesner. Hist. quad. p. 747.*

*Mus moschias*, (because, when dried, it smells of musk); *Gesner, Icon. quad. p. 116.*

*Mufaraneus*; *Ray, Synops. quad. p. 239.*

*Sorex araneus*, *cauda mediocri*, *corpore subtus albido*; *Linn. Syst. p. 74.*

*Mufaraneus*, *rostro productiore*: *Mus venenosus*; *Klein. quad. p. 58.*

*Mufaraneus supra ex fusco rufus*, *infra albicans*; *Brissón. Regn. anim. p. 178.*

an affinity to the mole, by its long nose; by its eyes, which, though larger than those of the mole, are much concealed, and more minute than those of the mouse; by the number of its toes, having five on each foot; by the tail and legs, especially the hind-legs, which are shorter than those of the mouse; by the ears; and, lastly, by the teeth. This little animal has a strong and peculiar odour, which is very disagreeable to the cats, who pursue and kill, but never eat the shrews. It is probably this bad smell, and the reluctance of the cats, which have given rise to the vulgar prejudice, that the bite of the shrew-mouse is venomous, and particularly hurtful to horses. But the shrew is neither venomous, nor is it capable of biting; for the aperture of its mouth is not large enough to take in a duplication of another animal's skin, which is absolutely necessary to the action of biting. The disease of horses, vulgarly ascribed to the bite of the shrew-mouse, is a swelling or blotch, and proceeds from an internal cause, which has no relation to a bite. This animal, especially in winter, frequents hay-lofts, stables, barns, and dung-hills. It feeds upon grain, insects, and putrid flesh. In the country, it frequents the woods, and lives upon grain. It conceals itself under moss and the leaves and trunks of trees, and sometimes in the holes abandoned by the mole, or in smaller holes which it digs with its muzzle and claws. The shrew produces an equal number of young, though not so frequently,

frequently, as the mouse. Its cry is also much sharper; but it is not nearly so agile. It is easily taken; because it both sees and runs badly. The colour of the shrew is a mixture of brown and red; but some are ash-coloured, and others nearly black, though all of them are white under the belly. They are very common in Europe; but they seem not to exist in America. The Brazilian animal mentioned by Macgrave\*, under the name of the shrew mouse, which, he says, has two black lists on the back, is larger, and seems to be a different species.

U 2

The

\* Macgravii hist. Brasil. p. 220.



## The WATER SHREW, or BLIND MOUSE\*.

THE water shrew, though a native of this climate, was unknown to any naturalist till M. Daubenton † discovered, and gave an exact description of it ‡. This animal is taken near the sources of fountains, at the rising and setting of the sun. During the day, it lies concealed in clefts of rocks, or in holes upon the banks of rivulets. It brings forth in the spring, and the litter generally consists of nine.

### THE

\* This animal has a long slender nose, very minute ears, and very small eyes, hid in the fur: The colour of the head and upper part of the body is black; and of the throat, breast, and belly, a light ash-colour: Beneath the tail is a triangular spot. It is much larger than the common shrew, being, from nose to tail, three and three fourth inches long; and the length of the tail is two inches; *Pennant's Synops. of quad. p. 308.*

† Mem. de l'Acad. année 1756. Mem. sur les M. Faraignes, par M. Daubenton.

‡ This assertion seems not to correspond with the following remark in p. 308. of Pennant's Synopsis: 'The water shrew mouse was long since known in England, but lost till May 1768, when it was discovered in the fens near Revesly abbey, Lincolnshire: it burrows in the banks, near the water, and is called by the Fen-men, *the blind mouse.*'

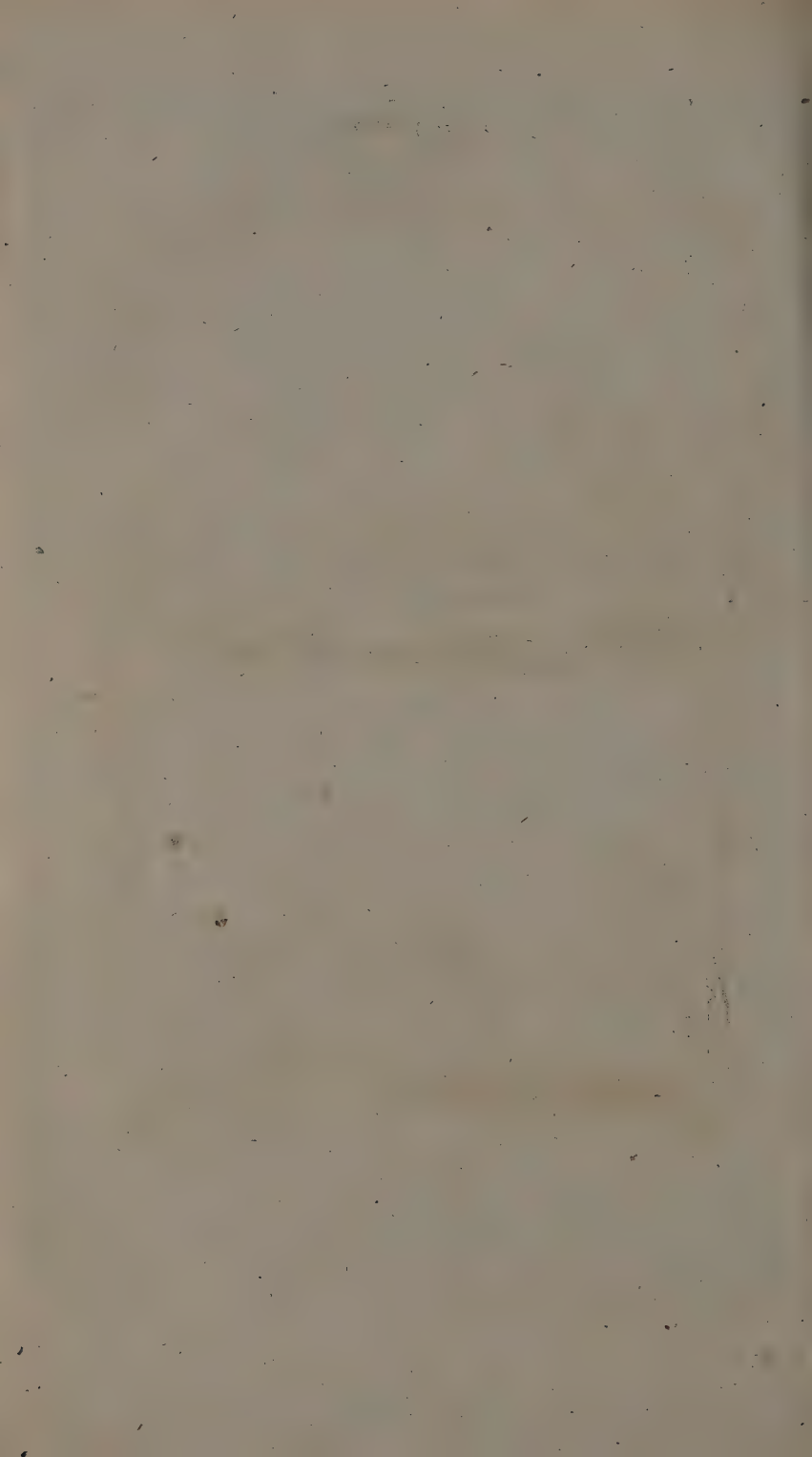


Plate LXXXIX  
SHREW MOUSE.



*A. Bell, Sculp.*

WATER SHREW MOUSE.



# T H E M O L E\*.

**T**HE Mole, though not blind, has eyes so small, and so covered, that it can have little benefit from the sense of seeing. Nature, by way of recompense, has bestowed on it a profuse portion

U 3

\* The mole has a long nose and snout; the upper jaw much longer than the under, no external ears, fore-feet very broad, with scarce any apparent legs before, and hind-feet very small. It has very minute eyes, hid in the fur, six cutting teeth in the upper, eight in the lower jaw, and two canine in each. The fore-part of the body is thick and muscular, and the hind-part taper; the fore-feet are placed obliquely, and resemble hands, with five toes, each terminated by strong claws. The hind-feet are very small, with five toes to each. The tail is short, and the skin very tough, so as scarce to be cut through. The hair, which is short, close set, and softer than the finest velvet, is usually black, sometimes spotted with white, and sometimes quite white. The length of the body is five and three fourth inches, and that of the tail one; *Pennant's Synops. of quad. p. 311.*

In Greek, *Ασπαλαξ*; in Latin, *Talpa*; in Italian, *Talpa*; in Spanish, *Topo*; in German, *Mulwurf*, *Maulwurf*; in Swedish, *Mullvad*; in Polish, *Kret*; in French, *La Taupe*.

*Σπαλαξ Galeni.*

*Talpa*; *Gesner, quad. p. 931. Icon. quad. p. 116. Ray, synops. quad. p. 236.*

*Talpa Europæus, caudata, pedibus pentadactylis; Linn. sist. p. 73.*

*Talpa nostras, nigra communiter; Klein. quad. p. 60.*

*Talpa caudata, nigricans, pedibus anticis et posticis pentadactylis. Talpa vulgaris; Brisson. regn. anim. p. 280.*

portion of the sixth sense, remarkable vessels and reservoirs\*, a prodigious quantity of seminal fluid, enormous testicles, a penis of immoderate length; and all these parts are concealed within the body, which must render them more hot and active. Of all animals the mole is most amply endowed with generative organs, and consequently with their relative sensations. It has, besides, a delicate sense of touch; a skin as soft as velvet; a very fine ear, and small hands, with five fingers, very different from the extremities of other quadrupeds, and nearly similar to the human hand; great strength in proportion to the size of its body; a compact skin; and a perpetual vigour. So lively and reciprocal an attachment subsists between the male and female, that they seem to dread or to disrelish all other society. They enjoy the placid habits of repose and of solitude, the art of securing themselves from disquiet and injury, of instantaneously making an asylum or habitation, of extending its dimensions, and of finding a plentiful subsistence, without the necessity of going abroad. These are the manners, the dispositions, and the talents of the mole; and they are unquestionably preferable to talents  
more

\* Testes maximos, parastatas amplissimas, novum corpus feminale ab his diversum ac separatum—penem etiam facile omnium, ni fallor, animalium longissimum; ex quibus colligere est, maximam prae reliquis omnibus animalibus voluptatem in coitu, hoc abjectum et vile animalculum percipere, ut habeant quod ipsi invidiant qui in hoc supremas vitae suae delicias collocant; Ray, *Synops. animal. quad.* p. 239.

more brilliant and more incompatible with happiness, than the most profound obscurity.

The mole shuts up the entrance of her retreat, and seldom leaves it, unless compelled by the admission of water, or when its mansion is demolished by art. She makes a round vault in the meadows, and generally a long trench in the gardens; because it is easier to remove cultivated ground, than a turf rendered compact and solid by the roots of herbs. She continues not long in miry nor in hard stony ground, but delights in a soft earth, stored with esculent roots, and well peopled with insects and worms, which constitute her chief nourishment.

As the moles seldom leave their subterranean abodes, they have few enemies, and easily elude the carnivorous animals. The overflowing of rivers is their greatest scourge: During inundations, they are seen swimming in vast numbers, and using every effort to gain the more elevated grounds; but most of them perish, as well as their young, who remain in their holes. Without this devastation, the great talents they have for multiplying would render them extremely inconvenient to man. They couple about the end of winter, and go but a short time with young; for we find them very small in the month of May. They generally bring forth four or five at a time; and it is easy to distinguish the hillocks under which they litter; for they are larger, and made with more art than the common kind. I believe these animals



animals bring forth more than once a-year; but of this I cannot be certain: It is a fact, however, that we meet with young ones from April to August. Perhaps some of them may be later in coupling than others.

The habitation where they deposit their young merits a particular description; because it is constructed with singular intelligence. They begin with raising the earth, and forming a pretty high arch. They leave partitions, or a kind of pillars at certain distances, beat and press the earth, interweave it with the roots of plants, and render it so hard and solid, that the water cannot penetrate the vault, on account of its convexity and firmness. They then elevate a little hillock below, upon the top of which they lay herbs and leaves, for a bed to their young. In this situation, they are above the level of the ground, and consequently out of the reach of ordinary inundations, and are, at the same time, defended from the rains by the large vault that covers the internal one, upon the convexity of which they rest, along with their young. This internal hillock, or vault, is pierced on all sides with sloping holes, which descend still lower, and serve as subterraneous passages for the mother to go in quest of food for herself and her offspring. These by-paths are firm and beaten, extend about twelve or fifteen paces, and issue from the mansion like rays from a centre. We likewise find, under the superior vault, the remains of the roots of the *colchicum*, or meadow

meadow saffron, which seem to be the first food given to the young. From this description it is apparent, that the mole never comes out but at a considerable distance from her habitation, and that the most simple and most certain method of taking both the old and the young, is to make a round trench, which will cut off all the communicating passages. But, as the mole, upon the smallest noise, flies, and endeavours to carry off her young, it will be necessary to employ three or four men with spades to raise the hillock at once, or to make a trench almost instantaneously, and then to seize them, or to watch them as they attempt to escape.

It has been foolishly asserted by some writers \*, that the mole and badger sleep during the whole winter, without taking any food. The badger, as we formerly remarked †, comes out of his hole in winter, as well as in summer, in quest of provisions; and it is easy to be ascertained of this fact, by the tracks he leaves upon the snow. The mole sleeps so little in winter, that she raises the earth in the same manner as she does in summer; and the country people remark, that *athaw approaches, because the moles make hills*. They are, indeed, fond of warm places; and they are often caught by the gardeners in the months of December, January, and February.

The

\* *Urfus, Meles, Erinaceus, Talpa, Vespertilio per hyemem dormiunt abstemii*; *Linn. Faun. Suec. p. 8.*

† See the Article Badger.

The mole frequents cultivated countries only. There are none in the dry deserts, nor in the cold climates, where the earth is frozen during the greatest part of the year. The animal called the Siberian mole \*, with green and yellow hair, is a different species from our mole, which abounds only from Sweden † to Barbary ‡; for, from the silence of travellers, it is presumeable, that they exist not in hot climates. Those of America are likewise different: The Virginian mole §, however, has a great resemblance to ours, except in the colour of the hair, which is mixed with a deep purple. But the red mole of America is a different animal ||. There are only two or three varieties in our common moles; we find them more or less brown or black; and we have seen them entirely white. Seba describes and gives a figure of a black and white mole, which was found in East-Friesland, and was somewhat larger than our mole \*\*.

S U P-

\* Albert Seba, vol. 1. p. 5.

† Linn. Faun. Suec. p. 7.

‡ Shaw's travels.

§ Albert Seba, vol. 1. p. 5.

|| Id. ibid.

\*\* This mole was found on the high-way. It is longer than the common mole, from which it differs in the colour of the skin only, which is variegated on the back and belly with black and white spots, together with a mixture of gray hair as fine as silk. The muzzle of this animal is long, and garnished with long bristly hair. The eyes are so small, that it is difficult to discover them; *Albert Seba*, vol. 1. p. 68.

Plate XC.  
MOLE.

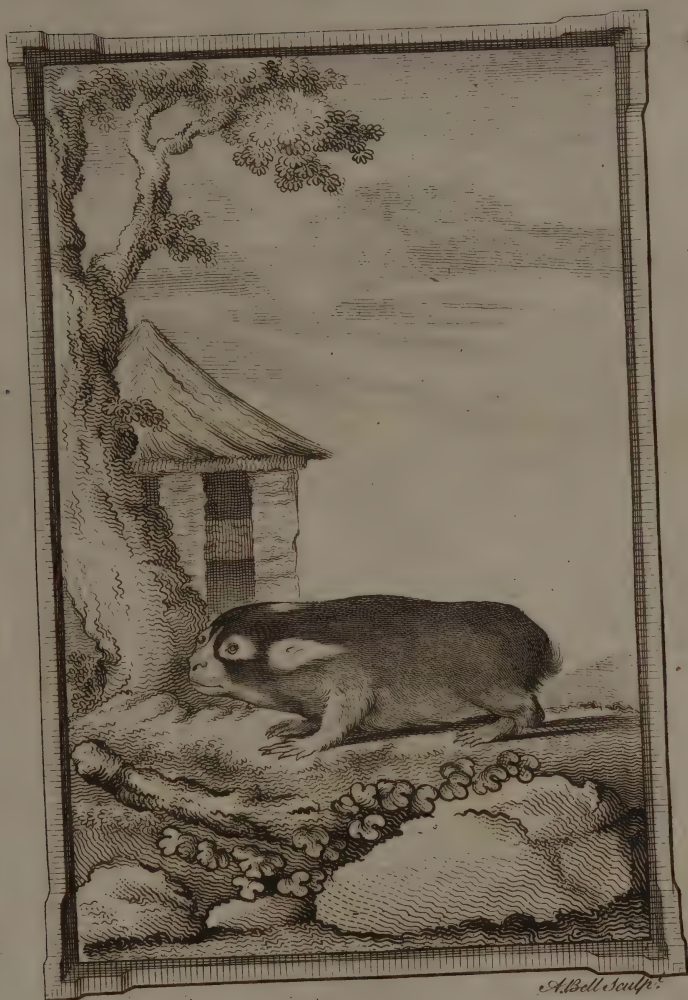


MOLE.  
*deprived of its skin.*



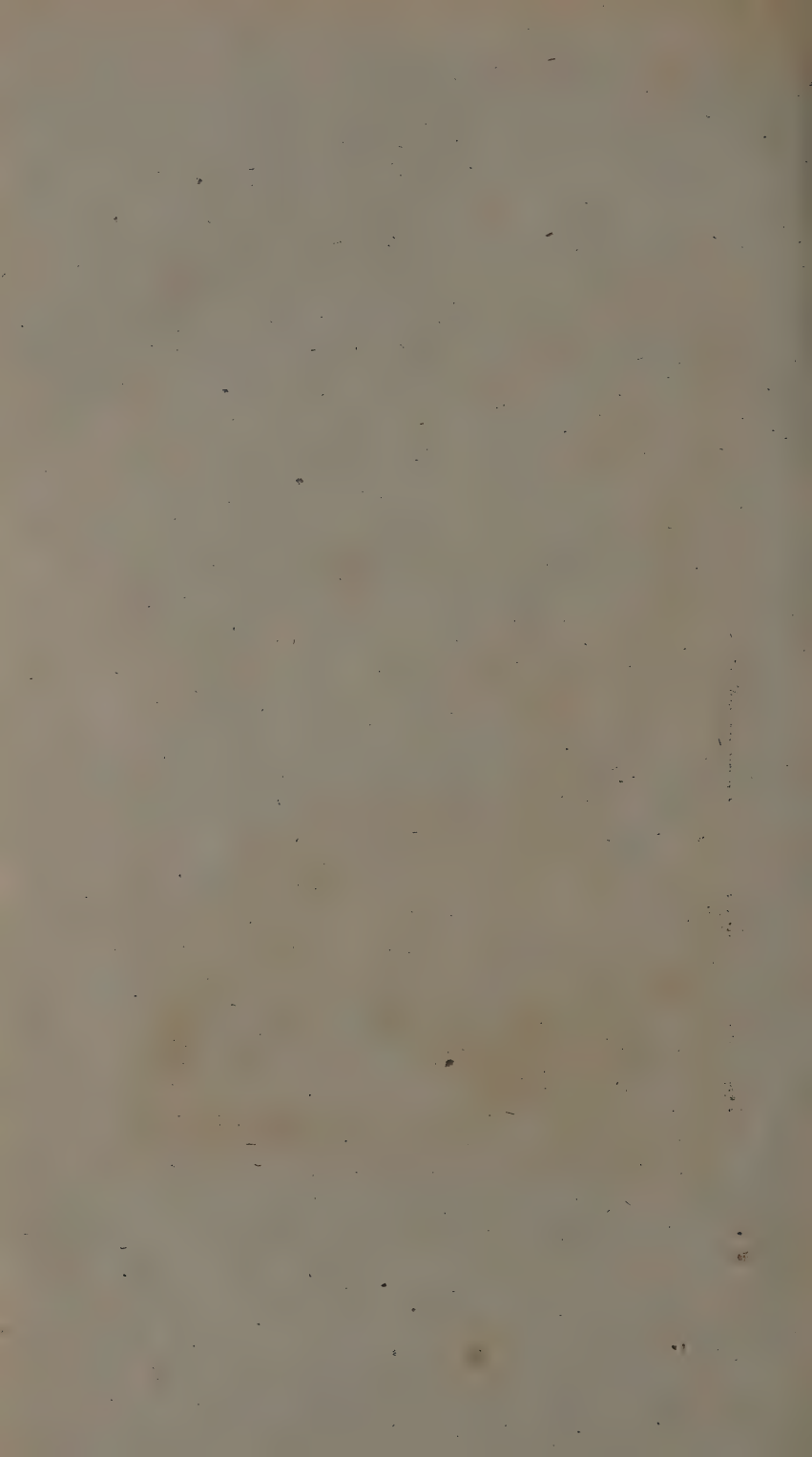


Plate XCI.



*A. Bell sculp.*

MOLE of the CAPE of GOOD HOPE.



## S U P P L E M E N T.

Pontoppidan assures us, that the mole exists not in Norway, because that country is too rocky to afford it proper accommodation.

## The MOLE of the Cape of Good Hope.

**I** Have here given a figure of a mole found at the Cape of Good Hope, a stuffed skin of which was sent me by M. Sonnerat. This mole pretty much resembles the common species in the form of its body, in the eyes, in the ears, and in the tail; but it differs in the head, which is larger, and in the muzzle, which resembles that of a Guiney-pig. The fore-feet are likewise different: The hair is not black, but dark brown, with a little yellow at the extremity of each hair. The tail is covered with large hairs of a yellowish white colour; and, in general, the hair of this mole is longer than that of the European. From all these descriptions we may conclude, that it is a particular species, and that, though allied to the common mole, it cannot be regarded as a simple variety.

The

## The PENNSYLVANIA MOLE.

**I**N Pensylvania, says M. Kalm, there is a species of mole, which lives principally on roots. This animal digs, in the fields, small winding subterraneous alleys. In proportion to its size, it has more strength and rigidity in its paws than most other quadrupeds. In digging the earth, it uses its feet like oars. M. Kalm put one of them into his handkerchief; and he found, that, in less than a minute, it had made a number of small holes, as if the cloth had been pierced with a bodkin. It was very mischievous; and, whenever it found any objects in its way, it immediately perforated them with its teeth. I presented to it, continues M. Kalm, my ink-piece, which was made of steel; it began to bite the ink-piece; but was soon repelled by the hardness of the metal, and never afterwards inclined to bite any thing that was held out to it. This animal raises not the earth, like the moles of Europe, but only makes small paths under the ground\*.

These characters are not sufficient to give us a proper knowledge of the animal, nor enable us to decide whether it belongs to the mole-tribe.

THE

\* Voyage de Kalm, tom. 2. p. 333.

## T H E   B A T \*.

**T**HOUGH all beings are equally perfect in themselves, since they proceed from the hands of the same Creator ; yet, in relation to man, some beings are more accomplished, and others seem to be imperfect or deformed. Of the former kind are all those whose figures appear to us to be agreeable and complete ; because all their parts and members are proportioned, all their movements and functions are easy and natural. The latter kind of beings, which to us have a hideous aspect, comprehends all those whose qualities are noxious to man, whose nature is uncommon, and whose form differs from the ordinary figures

\* This animal has long extended toes to the fore-feet connected by thin broad membranes, extending to the hind-legs. —The common bat has short ears, mouse-coloured fur, tinged with red : Its length is two inches and a half, and the extent of the wings nine inches ; *Pennant's synopsis of quad.* p. 371.

In Greek, *νυκτεγίς* ; in Latin, *Vespertilio* ; in Italian, *Nottola*, *Nottula*, *Barbastello*, *Vilpistrello*, *Pipistrello*, *Sporteglionio* ; in German, *Flaedermaus* ; in Swedish, *Laderlapp* ; in Polish, *Nietoperz*. *Vespertilio* ; *Gesner. Hist. Avi.* p. 766. *Icon. Avi.* p. 17. *Ray, Synopsis quad.* p. 243.

*Vespertilio murinus*, caudatus, naso oreque simplici, auribus capite minoribus ; *Linn. Syst.* p. 47.

*Vespertilio vulgaris* ; *Klein. quad.* p. 61.

*Vespertilio murini* coloris, pedibus omnibus pentadactylis, auriculis simplicibus. *Vespertilio major* ; *Briffon. Regn. anim.* p. 224.



figures from which we received our primary sensations, and derived those ideas which serve as models to our judgment. The head of a man upon the neck of a horse, and its body covered with feathers, and terminating in the tail of a fish, represents a picture of enormous deformity, for no other reason but because it unites what Nature has placed at the greatest distance. An animal, like the bat, which is half a quadruped and half a bird, and which, upon the whole, is neither the one nor the other, must be a monstrous being ; because, by uniting the attributes of two opposite genera, it resembles none of those models presented to us in the great classes of Nature. It is an imperfect quadruped, and a still more imperfect bird. A quadruped should have four feet, and a bat should have feathers and wings. In the bat, the fore-feet, though they serve the animal for the double purpose of flying and of trailing its body on the ground, are neither wings nor feet. They are deformed extremities, the bones of which are enormously lengthened, and united by a membrane, which is neither covered with feathers nor with hair. They are a species of pinions, or winged paws, in which we see only a claw of an inch in length ; and the other four long toes must act along with the former ; for they have no proper movements or separate functions. They are a kind of hands ten times larger than the feet, and four times longer than the body of the animal. In fine, they are parts which have  
 .. rather

rather the air of caprice than of a regular production. This membrane covers the arm, forms the wings or hands of the animal, unites with the skin of the body, and, at the same time, surrounds the legs, and even the tail, which, by this whimsical conjunction, becomes, in some measure, one of its toes. To these dissimilarities and disproportions of the body and its members may be added the deformities of the head, which are often much greater : For, in some species, the nose is hardly visible, the eyes are sunk near the ear, and confounded with the cheeks : In others, the ears are as long as the body, or the face is twisted into the form of a horse-shoe, and the nose turned up like a cock's comb. All of them have small, obscure, covered eyes, a nose, or rather nostrils, ill-formed, and a mouth extending from ear to ear : They all likewise endeavour to conceal themselves, fly the light, inhabit dark places only, from which they never go out but during the night ; they return at break of day, and fasten themselves against the walls. Their motion in the air is rather a desultory fluttering, than flying, which they execute very awkwardly. With difficulty they raise themselves from the earth, and never fly to any great height : They quicken, relax, or direct their flight, in a manner the most bungling and imperfect. Their flight is neither rapid nor direct, but consists of quick vibrations, in an oblique and winding direction. They fail not, however, in passing, to seize flies, gnats, and particularly

ticularly moths, which fly during the night only. These they swallow almost entire ; and we find, in their excrements, portions of wings and other dry and indigestible parts of moths. Having one day descended into the caverns of Arcy, to examine the stalactites, I was surprised to find, in a place covered with alabaster, and so dark and profound, a kind of earth which was totally different : It was a thick mass, several feet in extent, of a blackish matter, almost entirely composed of fragments of the wings and legs of flies and moths, as if immense numbers of these insects had assembled in order to die and corrupt together. This, however, was nothing else but the dung of bats, probably amassed during many years in a favourite part of these subterranean caverns ; for, through the whole of these caverns, which extend above half a quarter of a league, I saw no other collection of this matter ; and I imagined that the bats had fixed upon this place for their common abode ; because it was reached by a glimmering light from an aperture in the rock, and that they chose not to go farther, lest they should be lost in a darkness too profound.

Bats are real quadrupeds : Except the faculty of flying, they have nothing in common with birds. But, as the action of flying implies great strength in the upper and anterior parts of the body, the bats have their pectoral muscles much stronger and more fleshy than those of quadrupeds ; and in this they have an affinity to  
the

the birds. They differ from birds, however, in every other part of their structure, both external and internal: The lungs, the heart, the organs of generation, and all the other viscera, are similar to those of quadrupeds, except the penis, which is pendulous and loose, a thing peculiar to man, the monkeys, and the bats. Like the quadrupeds, the bats are viviparous, and have teeth and paps. It is said that they bring forth but two at a time, and that they suckle their young, and even carry them when flying. In summer they copulate and bring forth; for they are in a torpid state during winter. Some cover themselves with their wings as with a mantle, and suspend themselves by the hind feet to the vaults of subterraneous caverns; others stick fast to old walls, or retire into holes. Wherever they take up their winter abode, they always assemble in such numbers as to secure them against the effects of cold. They pass the winter without food or motion, never awake till the spring, and again retire at the end of autumn. They support hunger better than cold: Though carnivorous animals, they can subsist several days without food. When they get into a larder, they fix upon the suspended meat, and eat flesh whether raw or roasted, fresh or corrupted.

Two species of bats only have been described as natives of our climate. Beside these, M. Daubenton has discovered other six, which are equally numerous and common. It is  
 VOL. IV. X astonishing,



astounding, therefore, that they should so long have escaped notice. These species are perfectly distinct, and never associate together.

The first, which is well known, is the common bat, of which we have already given the synonimes.

The second, or long eared \*, is likewise known to the naturalist, and is perhaps still more numerous than the common bat. The long eared bat is much less than the common species; its wings are likewise shorter, and its muzzle smaller and sharper, and its ears of an immoderate size.

The third species, which we shall denominate the *Noctule*, from the Italian word *notula*, was not known, though very common in France, and even more frequent than the two preceding species. This bat is found under the eaves of houses, castles, and churches, and also in the hollows of old trees. It is nearly as large as the common bat. Its ears are broad and short, its hair reddish, and it has a sharp piercing voice, like the sound of a small bell †.

*Myotis myotis*. The

\* Bat with ears an inch long, thin, and almost pellucid; the body and tail are only one inch and three quarters long. This and all other bats, except the *Ternate* and the *horse-shoe*, have a lesser or internal ear, serving as a valve to close the greater when the animal is asleep; *Pennant's synops. of quad.* p. 371.

*Vespertilio auritus*, naso oreque simplici, auriculis duplicatis, capite majoribus; *Linn. Syst.* p. 47.

† The noctule has the nose slightly bilobated; ears small and rounded; on the chin a minute verruca; hair of a reddish



The fourth species we shall call the *Serotine*. It is smaller than the common bat or noctule, and nearly of an equal size with the long-eared bat. But it differs from the latter in having short, pointed ears, blacker wings, and the hair of a deeper brown\*.

The fifth species we shall name *Pipistrelle*, from the Italian word *pipistrello*, which likewise signifies a bat. The pipistrelle is not near so large as the common bat, the serotine, the noctule, or even the long-eared kind. It is the smallest and least ugly of all the bats, though the upper lip is turgid, the eyes small and deep sunk, and the front much covered with hair†.

The sixth species I call *Barbastelle*, from the Italian word *barbastello*, which also signifies a bat. This animal is nearly of the same size with the long-eared species: Its ears are as broad, but not near so long. The name *barbastelle* is the better adapted to it, because it appears to have large

## X 2                      whiskers :

dish ash-colour ; length to the rump two inches eight tenths ; tail one inch seven tenths ; extent of the wings 13 inches ; *Pennant's Synopsis of quad.* p. 369.

\* The serotine has a longish nose, and short ears, but broad at the base : The hair on the upper part of the body is brown mixed with ferruginous, and the belly of a paler colour. The length from nose to rump is two inches and a half ; *Pennant's Synopsis of quad.* p. 370.

† The pipistrelle has a small nose ; the upper lip swells out a little on each side ; the ears are broad, and the forehead covered with long hair : The colour of the upper part of the body is a yellowish brown, that of the lower part dusky, and the lips are yellow. It is the least of bats, not one inch and a quarter long to the rump ; the extent of the wings, six inches and a half ; *Pennant's Synopsis of quad.* p. 370.

whiskers: This, however, is only an appearance occasioned by the turgidness of the cheeks, which form a kind of pudding above the lips. The muzzle is very short, the nose much flattened, and the eyes near the ears\*.

Lastly, we shall call the seventh species the *horse-shoe*. The countenance of this animal is remarkably deformed. The most striking feature is a membrane in the shape of a horse-shoe, which surrounds the nose and the upper lip. In France it is very common, and frequents the walls and vaults of old houses. Some of them are larger, and others smaller; but they are otherwise so similar in form, that we consider them as of the same species. But, as I have remarked this difference, without finding any of an intermediate size, I cannot determine whether it is an effect of different ages, or a constant variety in the same species †.

## T H E

\* The barbastelle has a sunk forehead, long broad ears, the lower part of the inner sides touching each other, conceal the face and head, when looked at in front; the nose is short, and the end of it flatted; the cheeks are full; the upper part of the body is of a dusky brown, the lower ash coloured and brown: Its length to the rump about two inches, and the extent of the wings ten and a half; *Pennant's synopsis of quad. p. 370.*

† This bat has a membrane at the end of the nose in form of a horse shoe; the ears are long, broad at the base, and sharp pointed, inclining backward: It wants the little or internal ear. Colour of the upper part of the body cinereous, of the lower, whitish. There is a greater and less variety; the greater is above three inches and a half long from the nose to the tip of the tail; the extent of its wings above fourteen; *Pennant's synopsis of quad. p. 369.*

Plate XCII.



*A. Bell's sculp.*

BAT.



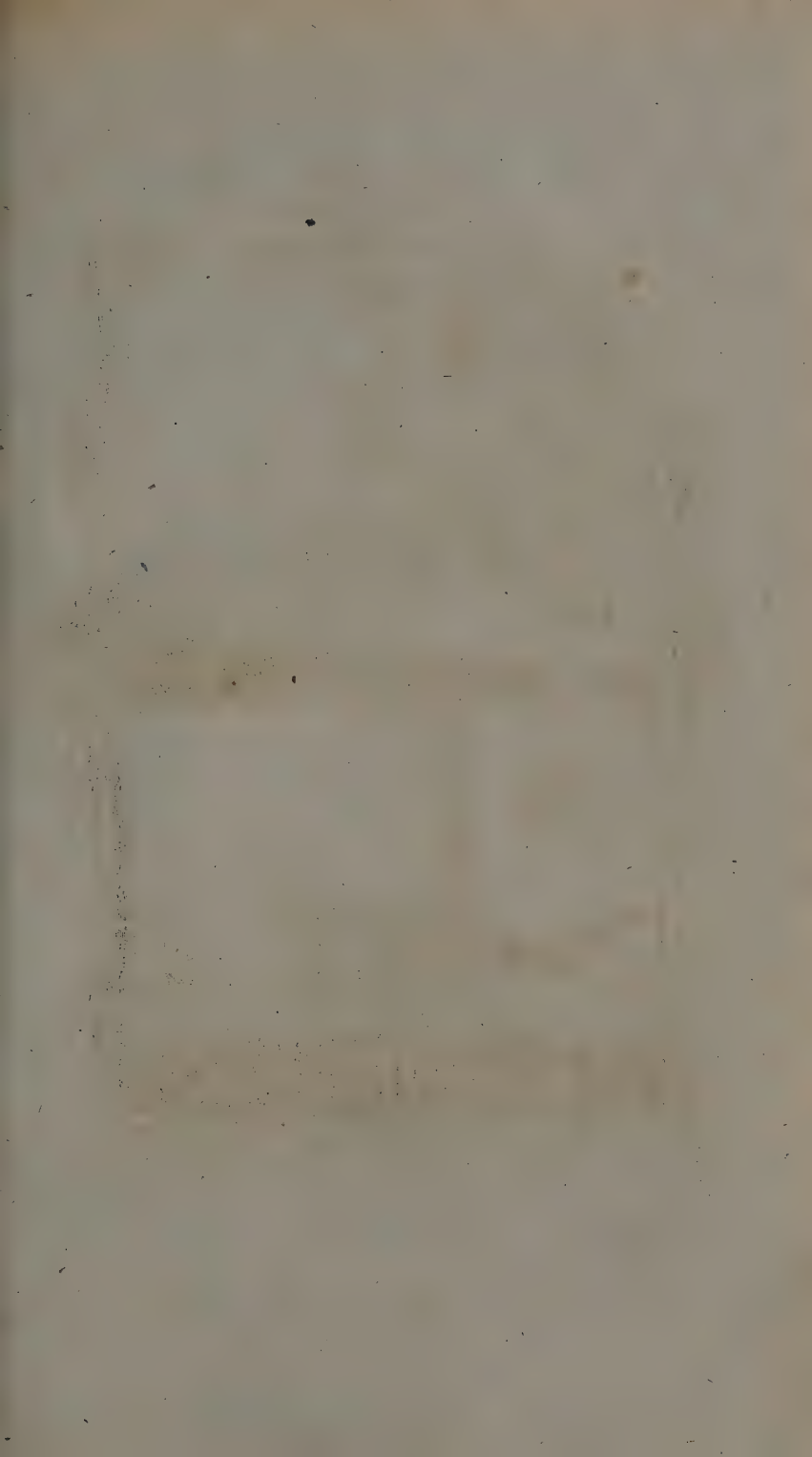




Plate XCIII.  
SMALL HORSE SHOE BAT.



*A. Belli sculp.*

LONG EARED BAT.



Plate XCIV.



NOCTULE.



*A Bell's sculp.*

SEROTINE.



BARBASTELLE.



PIPISTRELLE.

*A. Belli sculpt*

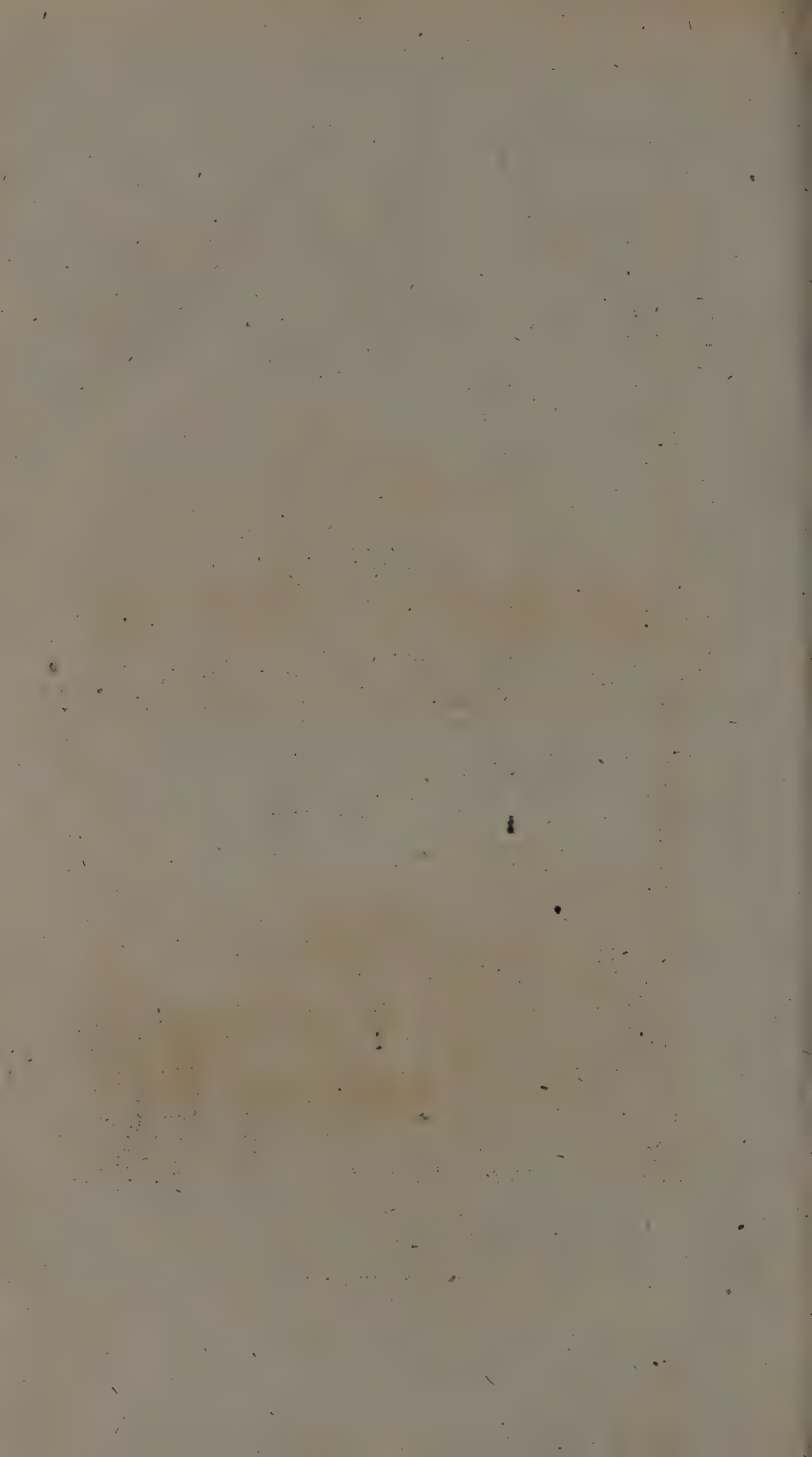






Plate XCVI.  
HORSE SHOE BAT.



HORSE SHOE BAT.  
Suspended by the Feet.

## THE FAT SQUIRREL \*.

**W**E have three species of this animal, the fat squirrel, the garden squirrel, and the dormouse, which, like the marmot, sleep during the winter. Of these the fat squirrel is the largest, and the dormouse the least. Several authors have confounded these three species, though they are easily distinguishable. The fat squirrel is about the size of the common squirrel, and has its tail covered with long hair: The garden squirrel is not so large as a rat, has very short hair on its tail, except near the extremity, where it is bushy: The dormouse is not larger than the common mouse; the hair on its tail is longer than that of the garden squirrel, but shorter than that of the fat squirrel, and its tip is bushy.

### X 3

The

\* Squirrel with thin naked ears; body covered with soft ash-coloured hair; belly whitish; tail full of long hair; from nose to tail, near six inches; tail four and a half; thicker in the body than the squirrel; *Pennant's Synopsis of quad.* p. 289.

In Greek, *μυαζος* according to Gefner. *ελιιος*, according to the Grammarians; in Latin, *Glis*; in Italian, *Galero*, *Gliero*, *Ghiro*; in Spanish, *Liron*; in German, *Scebens-chlafer*, *Gruel*; in Polish, *Sozurek*; in Swiss, *Rell*, *Rell musc*; in French, *Le Loir*, *Liron*, *Rat-Liron*, *Rat-veule*.

*Glis*; *Gefner. hist. quad.* p. 550. *Icon. quad.* p. 109. *Aldrovand. quad.* p. 409.

*Glis* supra obscure cinereus, infra ex albo cinerefcens; *Briffon. Regn. anim.* p. 160.

*Sciurus glis*, canus, subtus albidus; *Linn. syst.* p. 87.

The garden squirrel differs from the other two, by having black spots near its eyes, and the dormouse by having whitish hair upon its back. All the three are white or whitish on the throat and belly ; but the garden squirrel is of a fine white, the fat squirrel only whitish, and the dormouse rather yellowish than white, in all the under parts of the body.

These animals are improperly said to sleep during winter ; for it is not a state of natural sleep, but a torpor or numbness of the senses and members, produced by a chillness of the blood. The internal heat of these creatures exceeds not that of the air. When the heat of the air is ten degrees above the freezing point, their temperature is precisely the same. I have plunged the ball of a thermometer into the bodies of several living garden squirrels, and found their internal heat to be always nearly equal to the temperature of the air : I have even seen the thermometer sink a degree or half a degree when applied to the heart, the temperature of the air being at that time only  $11^{\circ}$ . Now, we know, that the heat of man, and of most quadrupeds, is always more than 30 degrees. It is not, therefore, surprising that these animals, whose heat is so small, should fall into a benumbed state, whenever their internal heat is not augmented by that of the external air ; and this always happens when the thermometer exceeds not ten or eleven degrees above the freezing point. This is the true cause of the torpid

torpid state of what are called the sleeping animals ; a cause which, though common to all animals that sleep during winter, has hitherto been overlooked. I have discovered it in the three animals under consideration, in the hedge-hogs, and in the bats ; and, though I have never had an opportunity of examining the marmot, I am persuaded that its blood, like that of the other sleepers, is cold ; because it is subject to torpor during the winter.

This torpid state continues as long as the cause by which it is produced, and ceases with the cold. A few degrees of heat above ten or eleven is sufficient to re-animate them ; and, if kept in a warm place during the winter, they are never benumbed, but go about, and eat and sleep from time to time, like other animals. When they feel cold, they roll themselves up in the form of a ball, in order to expose less surface to the air, and to preserve their natural warmth. It is in this form that they are found, during the winter, in hollow trees, and in holes of walls exposed to the south. There they lie, without the smallest motion, upon moss and leaves ; and, though tossed about, they neither extend themselves, nor exhibit any signs of life. From this state nothing can rouse them but the application of a gentle and gradual heat ; for they die when suddenly brought near a fire. Though, in this state, they have no motion, though their eyes are shut, and they seem to be deprived of every sensation ;  
yet



yet they feel pain when it is acute. A wound, or a burn, makes them contract, and utter a low cry, which they even repeat several times: Hence their internal sensibility, as well as the action of the heart and lungs, still subsist. It is presumable, however, that these vital motions act not with equal force as when the animal is in its ordinary state. The circulation, it is probable, proceeds in the large vessels only; the respiration is slow and feeble; the secretions are inconsiderable; and no excrements are voided. There must likewise be little or no perspiration, since they pass several months without eating, which could not happen, if they lost as much of their substance by perspiration, as they do at other times, when they have an opportunity of repairing this natural waste by taking nourishment. They still, however, lose some part; because, in long winters, they die in their holes. Perhaps, likewise, it is not the duration, but the rigour of the cold that destroys them; for they soon die when exposed to a strong frost. What induces me to think that they perish not by loss of substance, is, that in autumn they are exceedingly fat, and equally so when they revive in the spring. This quantity of fat serves for an internal nourishment to the animal, and supplies what it loses by respiration.

As cold is the only cause of their torpor, and as they fall not into this state but when the temperature of the air is below ten or eleven degrees, they

they frequently revive during the winter ; for, in this season, there are often many days when the liquor in the thermometer stands at 12, 13, 14, and even higher degrees ; and, during fine weather of this kind, the dormice come out of their holes in quest of food, or eat what they had collected in autumn. Aristotle, and all the succeeding naturalists, have asserted, that the dormice pass the whole winter without eating ; that, in this season of abstinence, they grow very fat, and that they are better nourished by sleep alone, than other animals by food. This notion is both absurd and impossible. The dormouse, which sleeps four or five months, could only fatten by the air it respires. Supposing a part of this air to be converted into nourishment, an augmentation so considerable could never be the result. It would not even be sufficient to repair the continual waste occasioned by perspiration. Aristotle might be led into this error by the mild winters of Greece, where the dormice sleep not perpetually, but often revive, take plenty of food, and are, therefore, extremely fat, though in a torpid state. The truth is, they are fat at all times, and particularly in summer and autumn. Their flesh resembles that of the Guiney-pig. The Romans reckoned dormice among their most delicate dishes, and reared them in great quantities. Varro describes the method of making warrens for them ; and we learn from Appicius the manner of dressing them in the high taste of his times. In this practice,

practice, whether from a disgust at these animals, because they resemble rats, or from the badness of their flesh, the Romans have not been followed by other nations. I have been informed by peasants who had eat them, that they were not better than water-rats. Besides, the fat squirrel is the only species that is eatable; the flesh of the garden squirrel is bad, and has a disagreeable flavour.

In manners and dispositions, the fat squirrel greatly resembles the common species. It lives in forests, climbs trees, and leaps from branch to branch, with less agility indeed, because the squirrel has longer legs, and a body more light and meagre. They both, however, live upon the same food, namely, filberts, chesnuts, and wild fruits. The fat squirrel likewise eats small birds, which he takes in their nests. He makes not a nest in the tops of trees, like the squirrel; but he makes a bed of moss in the hollows of their trunks, or in the cliffs of rocks; but he always chooses a dry place. He abhors moisture, drinks little, and seldom descends on the ground. He differs still more from the squirrel in this circumstance, that the latter is easily tamed, and the former continues always wild. They couple in the end of spring, and the females bring forth in summer, the litter generally consisting of four or five. The young grow quickly; and we are assured that they live six years only. In Italy, where these animals are still eat, the natives dig  
pits

pits in the woods, and strew them with straw, moss, and beach-mast. They choose dry places, under the shelter of rocks, and with a south exposure. To these the fat squirrels resort in great numbers, and the people find them there in a torpid state towards the end of autumn, when they are in the best condition for eating. These small animals are bold, and defend their young to the last extremity. They bite violently with their fore-teeth, which are very long, and of great strength. They neither fear the weasel nor small birds of prey. They escape from the fox, because he cannot follow them to the tops of trees. Their most formidable enemies are the martins and wild cats.

The fat squirrels are not generally diffused. They appear not in very cold climates, such as those of Lapland and Sweden; at least, they are not mentioned by the northern naturalists: The species they describe is the dormouse, which is the least of the three. Neither, I imagine, are they to be met with in very warm countries, because our travellers are silent on this article. There are few or none in open countries, like Britain; they require temperate climates abounding with wood. We find them in Spain, in France, in Greece, in Italy, in Germany, and in Switzerland, where they live in the forests upon the hills, and not on the tops of high mountains, like the marmots, which, though subject to torpor from cold, seem to delight in frost and snows.

The



## The GARDEN SQUIRREL, GREATER DORMOUSE, or SLEEPER \*.

**T**HE fat squirrel dwells in forests, and seems to avoid the habitations of men. The garden squirrel, on the contrary, lives in gardens, and is sometimes found in our houses. The species is likewise more numerous, and more generally diffused: There are few gardens which are not infested with them. They nestle in holes of the walls, run upon the trees and espaliers, single out the best fruits, and devour them when they begin to be mature. They seem to prefer peaches, which, if we be desirous of preserving, we should

\* The squirrel, with the eyes surrounded with a large spot of black, reaching to the base of the ears, and another behind the ears; head and whole body of a tawny colour; the throat and whole underside of the body white, tinged with yellow; the tail long; the hairs at the beginning very short, at the end bushy; length, from nose to tail, not five inches; the tail four; *Pennant's Synops. of quad. p. 291.*

In Latin, *Sorex*; in German, *Hasel Muff*; at Dantzick, *Grauwert*; in Flemish, *Slaep-rate*; in Polish, *Myszorzechowa, Koszatka*; in French, *Le Lerot*.

*Mus avellanarum major*; *Gesner. quad. p. 735. Icon. quad. p. 115. Ray, Synops. quad. p. 219.*

*Glis supra obscure cinereus, infra ex albo cinerescens, macula ad oculos nigra*; *Briffon. Regn. animal. p. 161.*

*Mus quercinus, cauda elongata pilosa, macula nigra sub oculis*; *Linn. syst. Nat.*



Plate XCVII.



FAT SQUIRREL.



*A. Bell sculp.*

GARDEN SQUIREL.



should be careful to destroy the garden squirrels. They also climb with ease pear, apricot, and plumb-trees ; and, when soft fruits are not to be had, they eat almonds, filberts, nuts, and even leguminous plants. Of these they carry off great quantities into their retreats which they dig in the earth, and particularly in well cultivated gardens ; for in old orchyards, they are often found in the hollows of trees, where they make beds of herbs, moss, and leaves. Cold benumbs or makes them sleep, and they are revived by heat. Eight or ten of them are frequently found in the same place, all benumbed, and rolled up, in the midst of their provision of nuts and filberts. They copulate in spring, and bring forth in summer. The litter consists of five or six young, which grow very quickly ; but which, nevertheless, are not fertile till the following year. Their flesh is not eatable, like that of the fat squirrel : They have the same disagreeable odour with the domestic rat ; but the fat squirrel has no bad smell. They never become so fat, and want those fatty follicles with which the intestines of the former are entirely invested. The garden squirrel is found in all the temperate climates of Europe, and even in Poland and Prussia ; but he appears not to exist in Sweden and the more northerly regions.

The

## The DORMOUSE, or SLEEPER\*.

THE dormouse is the least ugly of all the rats. It has brilliant eyes, and a bushy tail, which is rather fair than red. It never lives in houses, and seldom in gardens; but, like the fat squirrel, frequents the woods, and dwells in the hollows of old trees. The species is by no means so numerous as that of the garden squirrel. The dormouse is always found alone in its hole; and there is a considerable difficulty in procuring specimens of them. It appears, however, that they are pretty frequent in Italy, and that they exist in northern climates; for Linnaeus mentions them in his list of Swedish animals †. But they seem not to inhabit Britain; for Mr Ray ‡, who had seen them in Italy, says, that the *little sleeping rat* of England is not red on the back, like that of Italy, and that perhaps it is a different species. In France, it is the same as in Italy, and is

\* The squirrel with round naked ears; full black eyes; body of a tawny red; throat white; size of a mouse, but plumper; tail two inches and a half long, and pretty hairy, especially towards the end; *Pennant's Synops. of quad.*

Mus avellanarum minor; *Ald. quad. p. 440.* Ray, *Synops. quad. p. 220.*

Mus avellanarius, cauda elongata pilosa, corpore rufo, gula albicante, pollicibus posticis muticis; *Linn. Syst. p. 83.*

Glis supra rufus, infra albicans; *Briffon. regn. anim. p. 162.*

† Faun. Suec. p. 11.

‡ Ray, *Synops. quad. p. 220.*



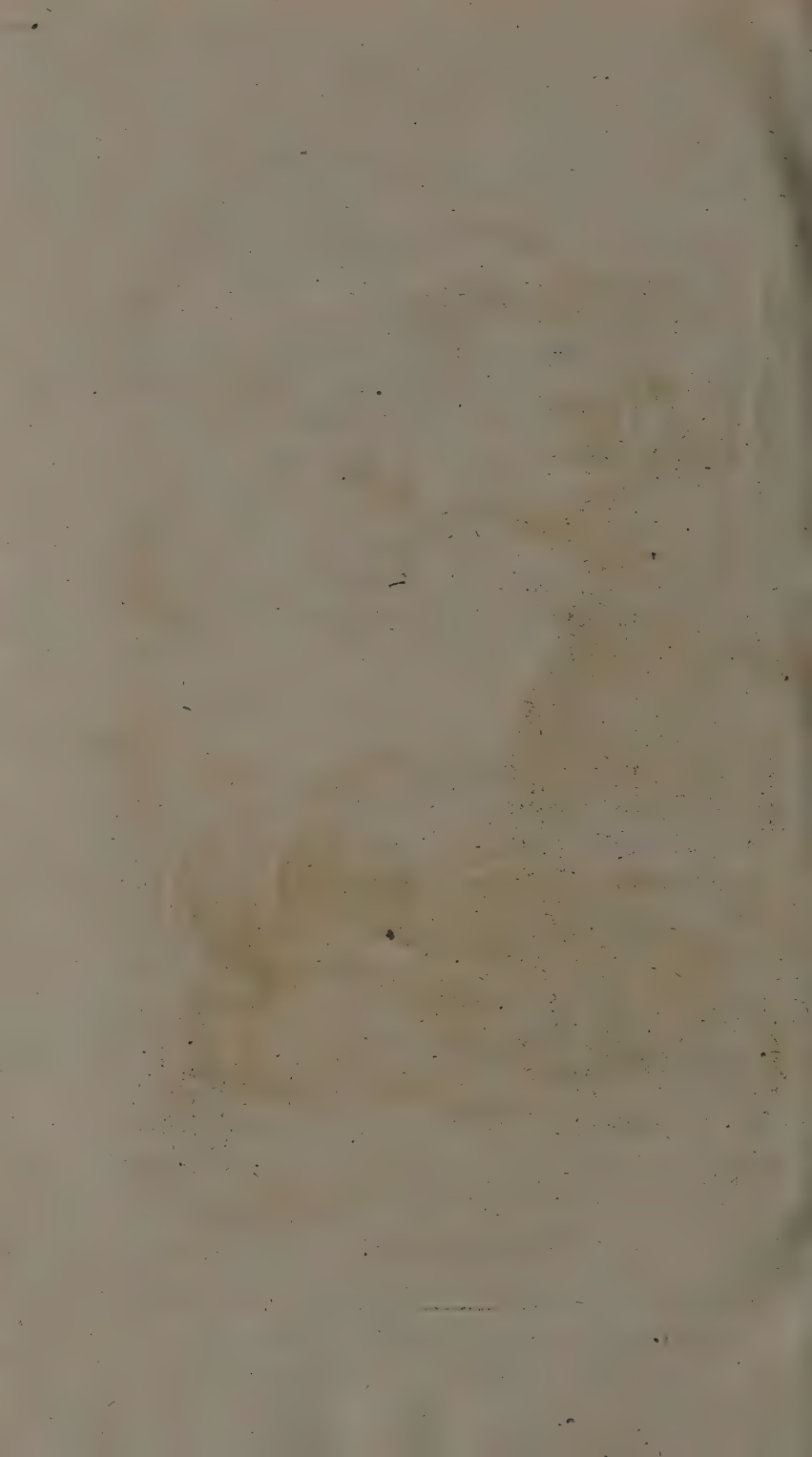
Plate XCVIII.



*A. Bell Sculp.*

DORE MOUSE.





is very well described by Aldrovandus \*. But he tells us, that there are two species in Italy; the one is rare, and has the smell of musk; the other is common, and has no particular odour; and that, at Bologna, they are both called dormice, because of their resemblance in figure and size. We know only the second of these species; for our dormouse has no smell, either good or bad. Like the garden squirrel, it wants the fatty follicles which invest the intestines of the fat squirrel, never becomes so fat, and, though its flesh has no disagreeable odour, it makes not good eating.

Like the fat and garden squirrels, the dormouse rolls itself up and sleeps in winter, revives in mild weather, and amasses nuts and dry fruits. It makes its nest upon trees, like the common squirrel, but generally lower, between the branches of hazels, or brushwood. The nest, which consists of interwoven herbs, is about six inches diameter, and is open above only. I have been assured by many countrymen, that they have found these nests in cut woods, and in hedges; that they are surrounded with moss and leaves; and that, in each nest, there were three or four young. When they grow large, they abandon the nests, and harbour in the hollows or under the trunks of old trees, where they repose, amass provisions, and sleep during the winter.

THE

\* Aldrovand. hist. quad. digit. p. 440.

## THE BROWN RAT\*.

**T**O this species of rat, which has been known for a few years past only, I have given the appellation of *Surmulot*. This animal is mentioned by no naturalist, except M. Brisson, who calls it the *wood-rat*. It is larger and more mischievous than the common rat. It has reddish hair, a very long naked tail, and the spine of the back arched like that of the squirrel. Its body is likewise thicker; and it has whiskers like a cat. It is not above nine or ten years since this species was diffused through the environs of Paris. From whence these animals came, is uncertain; but they have multiplied prodigiously. Neither is this wonderful, when we consider that they generally produce from 12 to 15 young at a litter, and sometimes even 19. They were first discovered at Chantilly, Marly-la Ville, and Versailles, where they committed great ravages.

\* Rat with the head, back, and sides, of a light brown colour, mixed with tawny and ash-colour; breast and belly dirty white; feet naked, and of a dirty flesh-colour; fore-feet furnished with four toes, and a claw instead of the fifth; length from nose to tail nine inches; tail the same; weight eleven ounces; is stronger made than the common or black rat; *Pennant's Synops. of quad. p. 300.*

Le Rat des bois. *Mus cauda longissima, supra dilute fulvus, infra albicans. Mus sylvestris. Brisson, regn. anim. p. 170.*

Le Surmulot; *Buffon.*

vages. M. le Roy favoured me with great numbers of them, both living and dead, and communicated to me the remarks he had made upon this new species. The males are larger, stronger, and more mischievous than the females. When hard pursued, or when we attempt to seize them, they face about, and bite the stick or the hand that strikes them. Their bite is not only cruel, but dangerous; for it is instantly followed by a considerable swelling, and the wound, though small, does not soon heal. The females bring forth three times a year: Hence two individuals of this species may produce at least 36 young in 12 months. The mothers prepare a bed for their offspring. Some of the females sent us, which we kept in cages, were with young; and, two or three days before they brought forth, we observed that they gnawed the wood of the cages, and made of the cuttings, which were in considerable quantities, a convenient bed for their little ones.

The brown rats have some qualities which make them approach to the nature of the water-rat. Though every where diffused, they seem to prefer the banks of waters. The dogs pursue them with the same remarkable fury as they chase the water-rat. When pursued, and they find it equally easy to take to the water, or to conceal themselves in brush-wood, they choose the water, enter it without fear, and swim with great dexterity and ease. This phaenomenon is chiefly exhibited when they cannot regain their holes; for,

like the long-tailed field-mouse, they dig subterraneous retreats, or rather they nestle in those made by the rabbits. The brown rats may be taken in their holes by ferrets, which pursue them with equal ardour as they do the rabbit.

These animals pass the summer in the country: And, though they feed principally upon fruits and grain, they eat young hares, partridges, and fowls: When they enter a hen-house, like the pole-cat, they kill more than they can eat. Towards the month of November, the mother and all the young quit the fields, and come in troops into the barns, where they do infinite mischief, by mincing the straw, consuming the grain, and infecting every thing with their ordure. The old males remain in the fields, each inhabiting his own hole, where, like the field-mice, they amass acorns, beach-mast, &c. filling the holes to the top, and remaining themselves at the bottom. They sleep not, like the dormouse; but go out in winter, especially when the weather is mild. Those which take up their abode in barns, banish all the mice and rats. It has even been remarked, that, since the multiplication of the brown rat about Paris, the common rats are much less frequent.

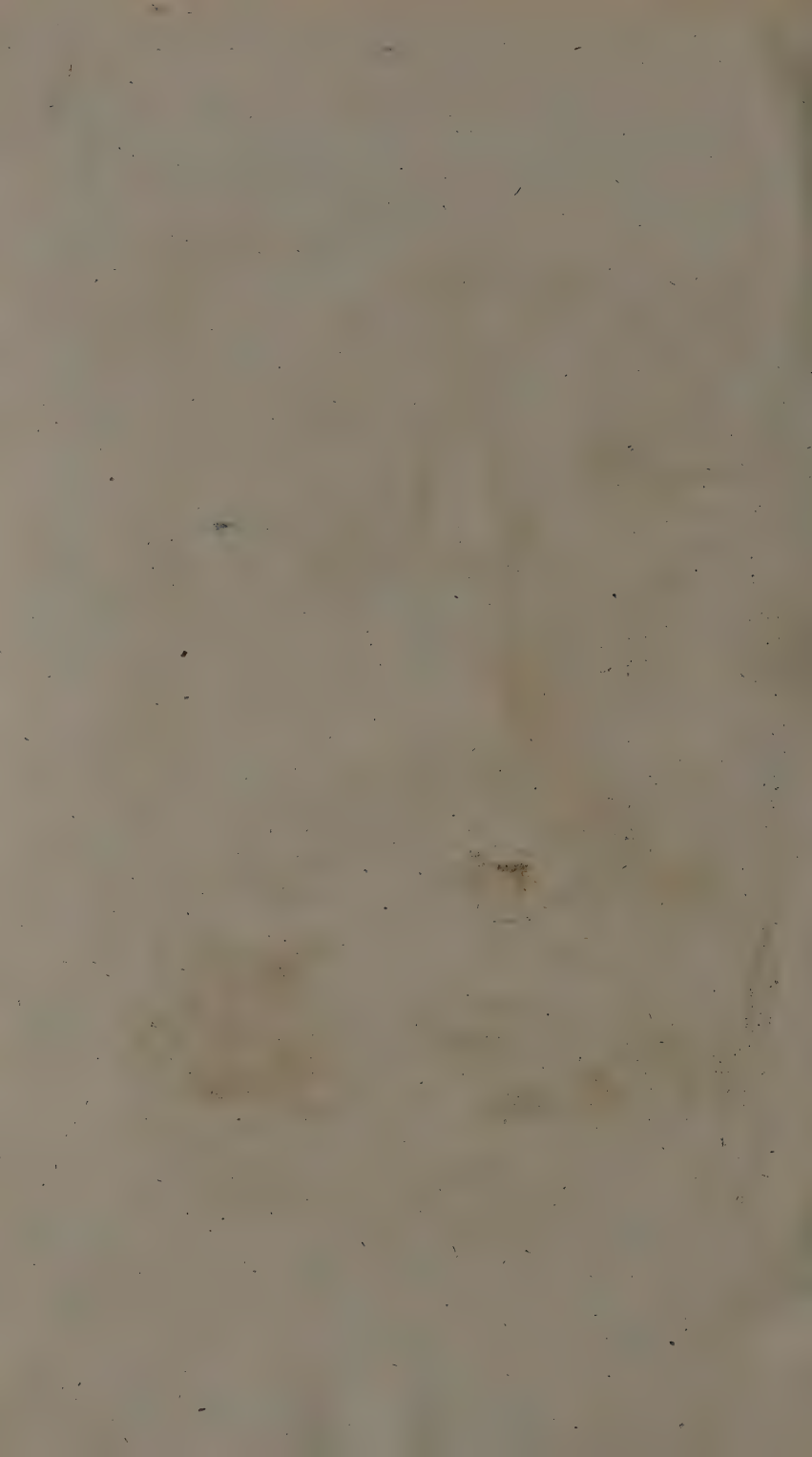
The



Plate XCIX.



BROWN RAT.



## The ALPINE MARMOT \*.

OF all modern naturalists, Gefner has brought greatest advantages to the science. To great erudition, he has joined good sense and enlarged views. Aldrovandus is only the commentator of Gefner, and authors of less note have implicitly copied him. We hesitate not, therefore, to borrow facts from him with regard to the marmots, which are natives of his country, and concerning which he was better informed than us, though, like him, we have kept several of them

Y 2 in

\* Marmot with short round ears, hid in the fur; cheeks large; colour of the head and upper part of the body, brownish ash, mixed with tawny; legs and lower part of the body reddish; subject to vary in colour, the Polish marmot being much more red, and of a brighter hue; four toes before, five behind; tail pretty full of hair; length from nose to tail about sixteen inches, tail six; and body thick; *Pennant's Synops. of quad.* p. 268.

In Latin, *Mus Alpinus*; in Italian, *Murmont*, *Marmota*, *Marmontana*; in German and Swiss, *Murmeltier*, *Murmentle*, *Mistbellerle*; in Polish, *Bobak*, *Swiszc*; in French, *La Marmotte*.

*Mus Alpinus* Plinii; *Gesner*, *quad.* p. 743. *Icon. quad.* p. 108. *Ray*, *Synops. quad.* p. 221.

*Mus marmota*, cauda abbreviata subpilosa, auriculis rotundis, buccis gibbis; *Linn. Syst.* p. 81.

Glis, *Marmota Italis*; *Klein. quad.* p. 56.

Glis, pilis e fusco et flavicante mixtis vestitus. *Marmota Alpina*; *Briffon. Regn. animal.* p. 165.

in a state of confinement. What he says corresponds so exactly with our own observations, that we doubt not the truth of his remarks, when he retails facts of which we have no knowledge.

The marmot, when taken young, may be rendered nearly as tame as our domestic animals. He learns to seize a stick, to dance, to perform various gesticulations, and to obey the voice of his master. Like the cat, he has an antipathy against dogs. When he begins to be familiar in the house, and perceives that he is protected by his master, he attacks and bites dogs of the most formidable kind. Though not so large as a hare, he is stouter, and his strength is aided by a peculiar suppleness and dexterity. With his fore-teeth, which are pretty long, he bites most cruelly. He attacks not, however, either dogs or men, unless when he is irritated. If not prevented, he gnaws furniture and stuffs, and, when confined, even pierces through wood. As his limbs are short, and his toes fashioned like those of the bear, he often sits on end, and walks with ease on his hind-legs. He carries food to his mouth with the fore legs, and eats in the manner of a squirrel. He runs pretty quickly up hill, but slowly on a plain. He climbs trees, and mounts between the cliffs of rocks, or two adjoining walls; and the Savoyards, it is said, learned from the marmots to climb for the purpose of sweeping chimneys. They eat every thing presented to them, as flesh, bread, fruit, roots, pot-herbs, may-bugs, grass-

grafs-hoppers, &c. ; but milk and butter they prefer to every other aliment. Though less inclined to theft than the cat, they endeavour to slip into the dairy, where they drink great quantities of milk, making, like the cat, a purring noise expressive of pleasure. Besides, milk is the only liquor that is agreeable to them ; for they rarely drink water ; and they refuse wine.

As to figure, the marmot has some resemblance both to the bear and to the rat. It is not, however, as Perrault and some others imagined, the *arclomys* or *bear-rat* of the ancients. Its nose, lips, and form of the head resemble those of the hare ; it has the hair and claws of the badger, the teeth of the beaver, the whiskers of the cat, the eyes of the fat squirrel, and the legs of the bear. The tail is short, and the ears terminate abruptly. The hair on the back is of a reddish brown colour, more or less deep : This hair is pretty rude ; but that of the belly is reddish, soft, and bushy. Its voice resembles the murmuring of a young dog, when caressed, or in a sporting humour. But, when irritated or frightened, it makes a whistling noise, so loud and piercing, that it hurts the ear. It loves cleanliness, and retires, like the cat, to void its ordure. But, like the rat, it has a very strong disagreeable smell, especially in summer. It is remarkably fat in autumn : Besides a large epiploon, it has two very thick fatty follicles. All the parts of its body, however, are not equally fat. The



back and reins are loaded with firm and solid fat, similar to the flesh of a cow's udder. Thus the marmot would make very good eating, if it had not always a disagreeable odour, which cannot be concealed but by very strong seasonings.

This animal, which delights in the regions of frost and snow; and which is found only on the tops of the highest mountains, is more subject than any other to be rendered torpid by cold. In the end of September, or beginning of October, he retires into his hole, from which he comes not out till the beginning of April. His retreat is made with precaution, and furnished with art. It is capacious, broader than long, and very deep, so that it can contain several marmots, without any danger of corrupting the air. With their feet and claws, which are admirably adapted for the purpose, they dig the earth with amazing quickness, and throw it behind them. It is not a hole or a straight or winding tube, but a species of gallery made in the form of a Y, each branch of which has an aperture, and both terminate in one, where the animal lodges. As the whole is made on the declivity of a mountain, the innermost part alone is on a level. Both branches of the Y are inclined, and the one is used for depositing the excrements of the animals, and the other for their going out and coming in. The place of their abode is well lined with moss and hay, of which they make ample provision during the summer. It is even affirmed, that this labour

labour is carried on jointly ; that some cut the finest herbage, which is collected by others, and that they alternately serve as vehicles for transporting it to their dens. One, it is said, lies down on his back, allows himself to be loaded with hay, extends his limbs, and others trail him in this manner by the tail, taking care not to overfet him. These repeated frictions are assigned as the reason why the hair is generally rubbed off from their backs. But, it is more probable, that this effect is produced by their frequent digging of the earth, which is sufficient to peel the hair off their backs. Whatever may be in this, it is certain, that they dwell together, and work in common at their habitations, where they pass three fourths of their lives. Thither they retire during rain, or upon the approach of danger, and never go out but in fine weather, and even then to no great distance. One stands sentinel upon a rock, while the others sport on the grass, or are employed in cutting it to make hay. When the sentinel perceives a man, an eagle, a dog, &c. he alarms the rest by a loud whistle, and is himself the last to enter the hole.

They make no provisions for winter, as if they divined that they would then have no use for victuals. But, when they perceive the first approaches of the sleeping season, they shut up the two entrances of their habitation ; and this they perform with such labour and solidity, that it is more easy to dig the earth any where else,

else, than in the parts they have fortified. They are at this time very fat, weighing sometimes twenty pounds ; and they continue to be plump for three months ; but afterwards gradually decay, and are extremely emaciated at the end of winter. When discovered in their retreats, they are rolled up in the form of a ball, covered with hay ; and they are carried off in so torpid a state, that they may be killed without seeming to feel pain. The fattest are chosen for eating, and the young ones for taming. Like the dormice, they are revived by a gradual heat ; and those which are fed in houses, and kept warm, never become torpid, but are equally lively and active in winter as in summer. As to the sleeping of the marmot, we shall not repeat what was said under the article of the fat squirrel. The cooling of the blood is the sole cause of this phaenomenon ; and it has been remarked by other writers, that, in this torpid condition, the circulation, as well as all the secretions, were extremely languid, and that the blood, not being renewed by fresh accessions of chyle, has no serosity \*. Whether they remain constantly torpid for seven or eight months, as is alledged by most authors, is uncertain. Their holes are deep, and they live together in numbers ; a considerable heat, therefore, must be preserved for some time, and they may eat the herbage they have amassed. We are even told by M. Altmann, in his treatise

on

on the animals of Switzerland, that the hunters allow the marmots to remain unmolested for three weeks or a month ; that they never dig in soft weather, or during a warm wind ; that, without these precautions, the marmots awaken and dig still deeper ; but that, by opening their retreats during hard frosts only, they find them so torpid as to be carried off with ease. We may, therefore, conclude, that they, in every respect, resemble the dormice ; and that, if they remain longer torpid, it is because they inhabit a climate where the winter is longer.

These animals produce but once a year, and the litter generally consists of three or four. The growth of their young is very quick ; they live only nine or ten years ; and the species is neither numerous nor much diffused. The Greeks were unacquainted with the marmot, or, at least, they have made no mention of it. Among the Latins, Pliny is the first who takes notice of it, under the name of *mus Alpinus*, or Alpine rat : And, indeed, though there are several species of rats in the Alps, none of them is so remarkable as the marmot, or, like it, lives in the summits of the highest mountains. The other species confine themselves to the valleys, the sides of the hills, or first mountains. Besides, the marmot never descends from the heights, but seems peculiarly attached to the chain of the Alps, and to prefer a south or east exposure to that of the north or west. He is found, however, in the Apennines,



nines, the Pyrenees, and the highest mountains of Germany. The *bobak* of Poland \*, to which M. Briffon †, and, after him, Messrs Arnault de Nobleville et Salerne ‡, have given the name of *marmot*, differs from this animal, not only in colour, but in the number of toes ; for it has five toes on the fore feet. The claw of the great toe appears beyond the skin ; and we find within, the two phalanges of the fifth toe, which is entirely wanting in the marmot. Hence the *bobak*, or Polish marmot, the *mouax*, or marmot of Canada, the *cavia*, or marmot of Bahama, and the *cricet*, or marmot of Strasburgh, are all different species from the Alpine marmot.

## S U P P L E M E N T.

I have here given the figure of an animal called *Monax*, or *Marmot of Canada*. The design was sent me by Mr Colinson, but without any description. This species of marmot seems to differ from the other marmots, by its having only *four* toes on the fore-feet, while the Alpine marmot and the bobak or Polish marmot have  
*five*

\* Auctuarium Hist. Nat. Poloniae, auct. Rzaczynski, p. 327.

† Regn. anim. p. 165.

‡ Hist. Nat. des Animaux.



*five* toes both on the fore and the hind feet. There is also some difference in the form of the head, which is more thinly covered with hair. The tail of the monax is longer and less bushy than that of the common marmot; so that this Canada animal may be regarded rather as a neighbouring species than as a simple variety of the Alpine marmot. In this species, I presume, the animal called the *Whistler* by Baron Hontan may be ranked \*. He says, that it is found in the northern parts of Canada; that it is nearly of the size of a hare, but shorter in the body; that it is hunted for its skin only, which is much valued; but that its flesh is not good. He adds, that the Canadians call these animals *Whistlers*, because, in fine weather, they whistle at the entrance of their holes, which he has frequently heard. Our Alpine marmot makes the same kind of whistling noise.

The

\* Voyage du Baron de la Hontan, tom. I. p. 95.

## The MARMOT of Kamtschatka.

THE Russian travellers have discovered an animal in Kamtschatka, which they have called a *marmot*, but of which they have given us a very slight intimation only. They tell us, that its skin resembles, at a distance, the variegated plumage of a beautiful bird; that, like the squirrel, it uses its fore-feet in eating; and that it feeds on roots, berries, and cedar-nuts. It is worthy of remark, that the expression *cedar-nuts* presents a false idea; for the true cedar bears cones, and other trees, called by the name of cedars, bear berries.

## The MARMOT of the Cape of Good Hope.

WE owe the first notices of this animal to M. Allamand, a learned naturalist and professor at Leyden. M. Pallas has described it under the name of *Cavia Capensis*, and M. Vossmaer under that of the *Bastard African Marmot*. Both have given a figure of it from the same plate, of which M. Allamand has sent me a copy. In

In writing on this subject to M. Daubenton, he remarks:

‘ I send you the figure of a species of cabiai, (I know no other name to give it), which I received from the Cape of Good Hope. It is not so well drawn as I could wish; but, as I have the animal stuffed in my cabinet, if you are inclined, I shall transmit it to you by the first opportunity.’

We accepted not this obliging offer of M. Alsamand, because we were soon after informed, that one or two of these animals had arrived in Holland alive, and hoped that some naturalist would furnish us with an exact description. Both M. Pallas and M. Vosmaer have accordingly described this animal, and I shall here give extracts from their remarks.

“ This animal,” says M. Vosmaer, “ is known at the Cape of Good Hope, under the name of the *Rock Badger*, probably because it lives among rocks, and under the earth, like the badger; to which, however, it has no resemblance. It has a greater affinity to the marmot, and yet it differs considerably from that animal. . . . Kolbe is the first who mentions this animal, and he says, that it resembles the marmot more than the badger.”

We shall adopt the name of the *Marmot of the Cape*, in preference to that of the cavia, because it differs from the cavia or cabiai in many respects: 1. In the climate, the cavia being an animal

animal of South America, while the other is found in Africa only. 2. Because *cavia* is a Brazilian word, and ought not to be transported into Africa, since it belongs to the true *cavia*, and to the *cavia-cobaia*, or Guiney-pig. Lastly, because the *cabiai* inhabits only the margins of waters, and has membranes between its toes; but the marmot of the Cape lives among rocks, and in dry grounds, which it can dig with its claws.

“The first animal of this species,” says M. Vosmaer, “that appeared in Europe, was sent by M. Tulbagh to the Prince of Orange, and its skin is still preserved in his cabinet. The colour of the first differed greatly from that of another which arrived afterwards: It was very young and very small. That which I am about to describe was a male, and was sent me by M. Bergmeyer of Amsterdam. . . . The life of this animal, according to my information, is very melancholy; for it slept much during the voyage. Its motion is slow, and performed by leaps. But, perhaps, in a natural state, it is equally active as the rabbit. Its cries were frequent, but short, sharp, and piercing.”

I shall observe in passing, that this character brings the animal still closer to the marmot; for the Alpine marmots often make a sharp whistling noise.

“In Holland,” continues M. Vosmaer, “they feed this marmot with bread and different kinds of pot-herbs. It is probable that this animal brings

brings forth often, and in great numbers. The form of their feet indicates that they are destined for digging the earth. The present marmot having died at Amsterdam, I gave it for dissection to M. Pallas.

“ In stature it resembles the common rabbit, but it is thicker and more collected. The belly is peculiarly gross; the eyes are beautiful, and of an ordinary size. The eye-brows, both above and below, are garnished with some short black hairs, above which there are five or six hairs of the same colour, but long, that turn back toward the head. It has similar whiskers on the upper lip, about the middle of the muzzle.

“ The nose is black, naked, and divided by a fine suture, which descends to the lip. The nostrils resemble a cord broken through the middle. Under the muzzle, on the throat and cheeks, are some long, rude, black hairs; and hairs of the same kind are scattered over the whole body. In the palate there are eight deep furrows; the tongue is very thick, tolerably long, garnished with small papillae, and oval at the point. In the upper jaw, there are two strong teeth, which protrude over the under jaw, and are considerably distant from each other, having a kind of triangular appearance. In the under jaw, it has four close cutting teeth, which are very broad, long, and flat. The grinders, of which it has four on each side, are also large; and a fifth of a smaller size may be added to the number.

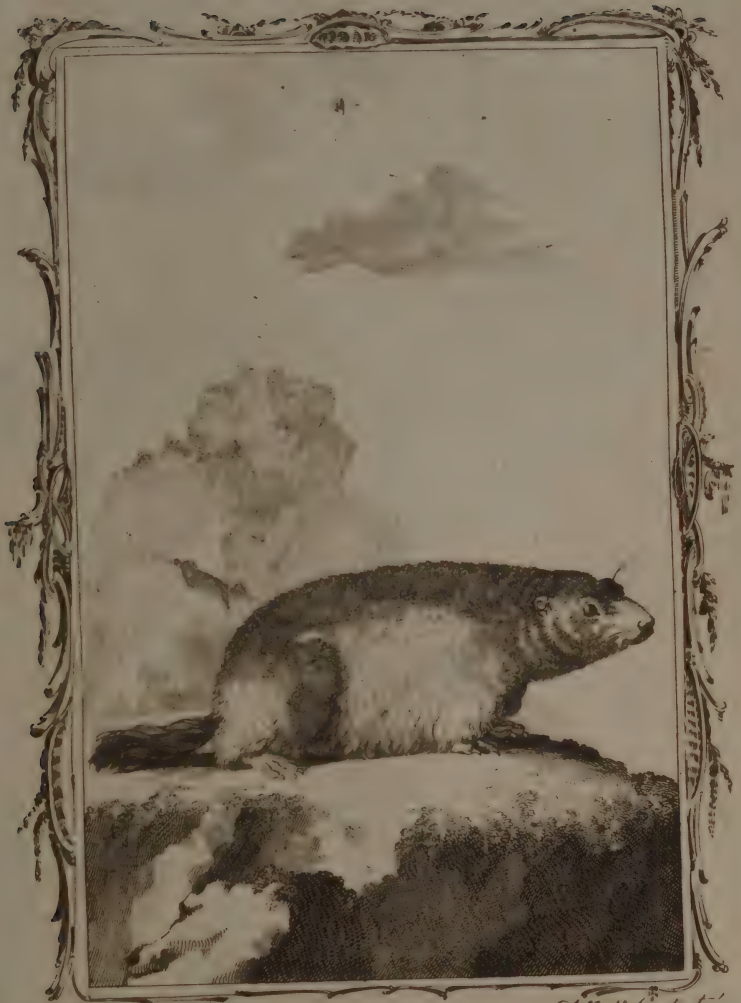
Its



Its fore-legs are short, and half covered with the skin of the body. The feet are black and naked. Those before have four toes; the middle one is longest; and the exterior one is shorter, and seems to adhere to the third. The toes are armed with round short claws, which adhere to the skin like the human nails. There are three toes on the hind-feet; the middle one only is furnished with a crooked claw, and the exterior toe is shorter than the others. The animal leaps on its hind legs, like the rabbit. It has not the smallest vestige of a tail. The colour of the hair is gray, or a yellowish brown, nearly like that of a wild rabbit; but it is deeper upon the head and back; and the breast and belly are whitish. There is also a whitish belt upon the neck and near the shoulders. This belt forms not a collar, but terminates at the top of the fore-legs. In general, the hair is soft and woolly."

END of VOLUME FOURTH.

Platé C.



*A Bell's Sculp.*

ALPINE MARMOT.





Plate CL.



*A. Bell sculp<sup>t</sup>*

MONAX or MARMOT of CANADA.



Plate CII.



*A. Bell sculp.*

MARMOT of the CAPE of GOOD HOPE.

